TERRADYN
CONSULTANTS, LLC

Pineland
Cumberland Hall
41 Campus Drive, Suite 301
New Gloucester, ME 04260

Portland
565 Congress Street, Suite 201
Portland, ME 04101

August 30, 2022 Project #22-01

Kate Burch
Assistant Planner
Town of Topsham
100 Main Street,
Topsham, ME 04086

SUBJECT: AUGUSTA ROAD SUBDIVISION REVISIONS

Dear Kate:

On behalf of Building Systems, LLC, Terradyn Consultants has revised the Augusta Road Subdivision plans based on the preliminary Planning Board meeting and comments received in writing from Tom Saucier, review engineer. Additional information required for final approval is also include in this letter. A comment response letter to review comments from Tom Saucier is included in Attachment 1. The Planning Board asked for information on the home construction type. The applicant indicated that he will review all proposed lot development plans and building plans and require that the homes are stick built, not manufactured home types.

TOM SAUCIER REVIEW & STORMWATER

The project plan set has been revised per Tom Saucier's comments. We provided responses to his comments and questions in the letter included in Attachment 1. The stormwater analysis HydroCAD model was also updated in response to his comments and is provided in Attachment 2. No other revisions to the stormwater report resulted.

DECLARATION OF EASEMENTS AND ROAD MAINTENANCE

As part of this final submission a Declaration of Easements and Road Maintenance was prepared by the applicant's attorney and is include in Attachment 3. This agreement includes Halcyon Drive and the lot 6/7 shared gravel driveway Wesleys Way. Stormwater inspection and maintenance is outlined in the Stormwater Management System Inspection and Maintenance Plan included in Attachment 4 and previously submitted as part of the stormwater report.

The intent is that the road, Halcyon Drive, will be offered for acceptance by the Town, at which point the roadway maintenance and maintenance of the stormwater ditches and culverts for the road development will be the Town's responsibility. This includes the culvert beneath the lot 6/7 shared driveway because it conveys stormwater runoff from upgradient areas along the roadway. In the interim, the Road Maintenance and stormwater maintenance will be the responsibility of the lot owners as outlined in the declaration. The lot 6/7 driveway maintenance will remain the responsibility of the owners of Lots 6 and 7, regardless of whether Halcyon Drive becomes a Town road or not.

TEST PITS

Due to changes in lot lines resulting from plan modifications we needed new test pits for septic on lots 5 and 6. The new test pit and septic locations are shown on the revised plan set, and new test pit logs are included in Attachment 5.

COST ESTIMATE

An itemized cost estimate for construction of the road, stormwater management, and shared driveway was completed for the performance guarantee. The overall cost is estimated to be $356,851.27. Please find the itemized estimate in Attachment 6.

LEDGE BLASTING

There is exposed ledge on the site in the vicinity of the proposed roadway from approximate station 4+00 to 7+00. We anticipate approximately 400-700 CY of blasting to remove this ledge to construct the roadway with appropriate subbase gravels and ditching. We are requesting that the planning board approve this quantity of ledge blasting as part of this project.

The applicant will work directly with the code enforcement officer and others at the Town as necessary at the time of scheduling the blasting work to ensure appropriate permits are obtained and notifications to abutters are sent. Blasting Permit paperwork will be submitted at the time that blasting is proposed to take place because it includes the days and times proposed for blasting and abutter notification. The applicant has completed this paperwork on previous jobs in the past and is familiar with the process of working with Code Enforcement.

CLOSURE

The revised project plan set is included with this submission. We look forward to discussing the final approval with the Planning Board at the September 8th meeting. If you have any questions or require additional information, please contact me at 207-322-1223 or adrienne@terradynconsultants.com.

Sincerely,
TERRADYN CONSULTANTS, LLC

Adrienne Fine, P.E.
Senior Project Engineer

Attachments:

1 – Comment response letter to Tom Saucier
2 – Revised HydroCAD model
3 – Road Maintenance Agreement
4 – Stormwater Management System Inspection & Maintenance Plan
5 – New test pits
6 – Cost Estimate Worksheet

Attachment 1

Response to Comments Letter

TERRADYN
CONSULTANTS, LLC

Pineland
Cumberland Hall
41 Campus Drive, Suite 301
New Gloucester, ME 04260

Portland
565 Congress Street, Suite 201
Portland, ME 04101

August 29, 2022 Project #22-01

Tom Saucier, P.E.
President
Site Design Associates
23 Whitney Way
Topsham, ME 04086

SUBJECT: AUGUSTA ROAD SUBDIVISION RESPONSE TO COMMENTS

Terradyn Consultants, LLC is pleased to provide the following response to comments from Tom Saucier, Site Design Associates, received on August 26, 2022. The review comments are repeated in italics with our responses below. Some comments have older and newer parts, with the new part we are responding to indicated by red text.

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1. *Will the proposed road be offered to the town for acceptance?*

Reference should be made to chapter 185-6 of the Topsham code for a required condition of approval that provides for the creation of an HOA for the road maintenance should the road not be accepted by the town. An HOA may be required for the maintenance of the mailbox area, and some sort of maintenance agreement will be needed for the common drive and culvert under the drive. We believe an easement will also be required to locate the mailbox area within the right of way, if the road were to be offered for acceptance.

Response: A "Declaration of Easements and Road Maintenance" is included with the final submission, which outlines road maintenance responsibility and the shared driveway maintenance. There is also a "Stormwater Management System Inspection & Maintenance Plan" that goes with the project. We are open to additional conditions as necessary to satisfy chapter 185-6.

2. *If the road will be offered to the town, a detailed cost estimate should be included in the final submission.*

   Response: The detailed cost estimate is included with this final submission.

3. *Per section 225-34., a written post-construction inspection plan should be provided. The plan and the construction phase inspection plan should meet the requirements of the attached MDEP checklist.*
   The plan that was submitted should be more closely tailored to this project and include the rainfall even triggers a wet weather inspection. (1" post construction)

   Response: A revised site specific I&M plan is included with the final submission. The plan indicates a 1" rainfall event triggering a wet weather post construction inspection.

4. *The narrative indicates the 13 ft width of the proposed access drive is based on the Topsham standard for a private way serving 2 lots. In actuality, that standard requires 2-9 ft wide lanes for a total width of 22 ft. NFPA requires a minimum 20 ft wide access. The minimum width is ultimately up to the fire chief, who should be consulted. When that is determined, the applicable details should be provided.*
   It appears this comment has been addressed, but the chief should review the dimensions of the turnaround.

   Response: The shared driveway dimensions including the turnaround and reduced width section have all been reviewed by the Fire Chief and we previously provided their emailed response. The Fire Chief reviewed the turnaround and provided us with comments and we revised the dimensions to satisfy their requirements prior to our last submission.

5. *We have not had the opportunity to review the stormwater management plan for the project, but will do so when final plans are submitted. The applicant should verify that the headwater depth at the proposed culvert inlets is no deeper than one pipe diameter for a 25 year storm event.*
   We have reviewed the stormwater management plan and culvert designs. The inverts and embedment should be clarified for the 36 inch diameter culvert under Halcyon Drive, similarly to the 36 inch diameter culvert under the lot 6 and 7 drive. Storage for the embedded culverts starts at the pipe inverts in the model, while it should start at the embedment elevation. The 36 inch diameter Halcyon Road culvert elevations and embedment depth shown on the plans conflict with the model, and should be reviewed. Lastly, why is the 18" diameter culvert under Augusta Road modelled with a 9 inch embedment depth?

   Response: The 36" culvert is embedded 12" so it essentially is 24" above the ground surface but 36" wide. We found and have revised the error in the 36" culvert under Halcyon Drive in the model so storage for the pipe invert modeled now lines up with the 12" embedment. A revised HydroCAD model is included with this response to comments. The Existing 18" diameter culvert under Augusta Road was surveyed as "crushed" but the contours reflect that water still passes through it, so this embedment depth was utilized to model an imperfect culvert in the existing condition.

DRAWINGS

1. *Drawing C-2.0 - Subdivision Plan*

b. The stormwater easements from the culvert outlets should be 30 ft in width. The westerly easement should extend to the wetland to the south and the easterly easement should extend to a point beyond the lot 6 and 7 drives.

Response:

b. The stormwater easement at the wetland crossing at approximate station 7+20 has been widened to 30' and extended to the lot 6/7 driveway easement. This area is outside of any construction or wetland disturbance so we do not expect any work or maintenance activities to occur in this area, but have added the easement to satisfy this comment.

2. *Drawing C-3.0 – Site Layout*

e. The right of way should be located 20 ft off the ends of the pavement at the turnaround. The 20 ft should be provided off the end of the turnaround arm as requested. Also, the road should end 60 ft from the center of the turnaround as previously shown, versus the 55 ft now shown.

Response: We revised the roadway to be 60ft beyond the hammerhead intersection again and extended the ROW 20ft beyond this. We also extended the ROW 20ft beyond the hammerhead leg.

3. *Drawing C-4.0 and 5.0 – Grading Plans and Profile*

d. Steel beam guardrail should be specified versus the wooden shown. The face of the guardrail should be offset 30 inches from the edge of the travel way.

f. Grading and culverts for the lot 6 and 7 access should be provided. The cover shown over the 36 inch diameter culvert is inadequate.

i. Additional comment: please add a note calling for a minimum driveway culvert diameter of 15 inches.

Response:

d. We have updated the guardrail to be steel.
e. Grading and culverts for lots 6 & 7 has been revised. A driveway culvert only needs 12" of cover, but we have increased it to 18" due to the pipe size.
i. A driveway culvert detail has been added to sheet C-6.2 and note has been added indicating the minimum 15" size.

4. *Drawing C-6.0 – Erosion Control Details and Notes*

   a. Riprap apron stone sizes should be specified. A minimum stone size of 6 inches is specified. That would required a D50 stone size of 12", a maximum stone size of 18", and a thickness of 24". If that is the intent, the detail should be updated with this information.

   b. The construction inspection requirements should be updated per the attached checklist, including identifying the storm which triggers inspections. (0.5" in 24 hours). The construction inspection requirements outlined in the DEP checklist should be added to the drawing, including the storm triggering inspections.

   Response:

a. We have revised our details on C-6.0 to include updated tables and sizing from DEP. Minimum stone size is now based on the table from DEP and pipe size dependent.

b. The construction inspection requirements have been added to sheet C-4.0.

5. *Drawing C-6.1 – Site Details and Notes*

a. *The wetlands/stream crossing detail should be updated to include guardrail. It is not appropriate for an 8 ft high 2:1 slope to begin at the edge of the road shoulder. Steel beam guardrail should be specified, versus the wooden shown. The face of the guardrail should be offset 30 inches from the edge of the travel way.*

b. *The stone size specified for the wetland /stream crossing outlet apron should be verified with a calculation based on flow rates. It seems small and the layer seems thin. See above regarding stone size.*

c. *The engineer should consider an alternative to crushed stone under the wetland/stream crossing culvert. The detail now specifies compacted gravel. Suitable native material would be the best option, if available.*

d. *Compaction requirements should be included for the wetland/stream crossing and the minor street access typical section. Make reference to MDOT requirements as appropriate.*

e. *Where is the riprap swale detail applicable? Addressed.*

f. *The level spreader detail should be revised per the plan view shown on the drawings. The detail shown would not be applicable to the installation for this project. Not addressed.*

g. *The minor street typical section calls for two different materials under the subbase gravel. The material used should be consistent throughout to encourage proper drainage of the road structure. The note included with the detail continues to specify one material under the "driving surface" and another in other areas.*

h. *There are conflicts between the road section and the crossing section regarding the geotextile specifications and locations. This should be reviewed. Why is geotextile shown only in fill sections? It may or may not be required in both fill and cut sections, as conditions dictate. Maybe this could be better clarified with a note stating this.*

Response:

a. The guardrail has been updated to be steel.

b. We have revised our details on C-6.0 to include updated tables and sizing from DEP. Minimum stone size is now based on the table from DEP and pipe size dependent.

c. We reviewed this material and detail with the applicant, Jeff Munn, who is also the contractor who will build the road. He indicated that compacted gravel is typical for this construction and provides the best base while also mimicking natural conditions. If native material is an option for these crossings, he will use that. We have added a note to the detail.

d. We have added a note to "compact per DOT specs" to the detail.

e. The rip rap swale is applicable in the ditch from sta 1+75 to 3+50 left.

f. We have replaced the LLS detail with a standard LLS detail more representative of this type of LLS with a shallow depression and built up berm. The applicant/contractor is familiar with the construction of LLS and he and I have worked together on other projects including LLSs in the past. The exact ditch directions shown on the detail are schematic and the grading plan shall be referenced for the exact ditch location and grading leading up to the LLS.

g. The intent of the note on the street section detail is to indicate that fill areas outside of the road base (back slopes for ditches, extensive fill outside of the roadway, berms) can be common borrow material suitable for embankment construction and doesn't have to be the same granular borrow as required beneath the driving surface (essentially represented by ditch line to ditch line). We are not saying two materials can be used from ditch line to ditch line, but outside the ditch line on back slopes, etc.

then common borrow for embankments is acceptable. Please let me know if you need additional clarification.

h. The geotextile shown on the details is schematic and the note indicates that it would be used in areas of wetland crossing, which would typically be in fill due to the need for a wetland crossing culvert and adequate cover over the culvert. We have modified the note to indicate "…in fill or cut conditions".

CLOSURE

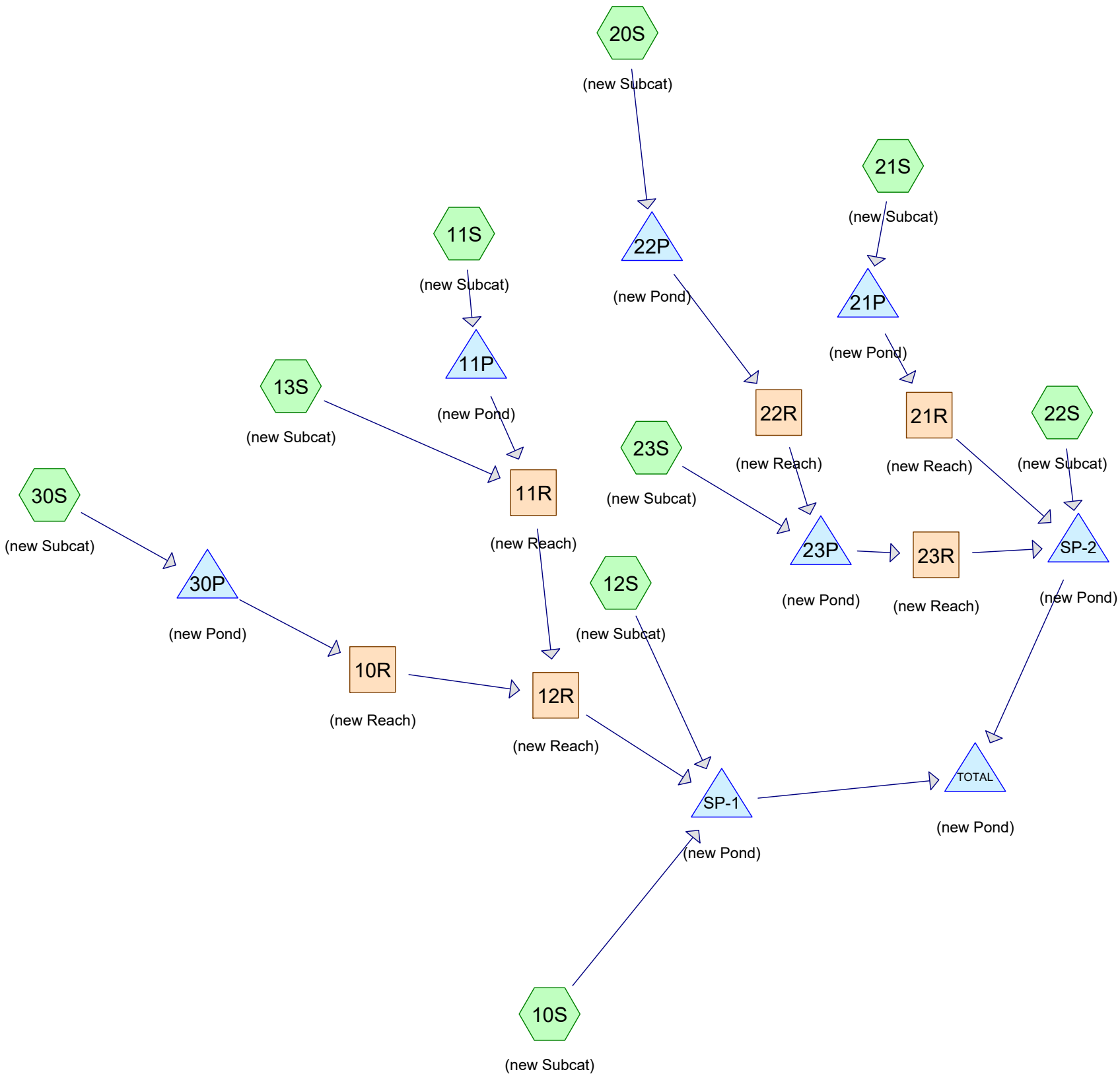
If you have any questions or require additional information, please contact me at 207-322-1223 or adrienne@terradynconsultants.com.

Sincerely,
TERRADYN CONSULTANTS, LLC

Adrienne Fine, P.E.
Senior Project Engineer

Attachment 2

Revised HydroCAD Model



Routing Diagram for POST

Prepared by {enter your company name here}, Printed 8/29/2022

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
8.497	74	>75% Grass cover, Good, HSG C (10S, 11S, 12S, 13S, 20S, 21S, 22S, 30S)
2.984	80	>75% Grass cover, Good, HSG D (10S, 12S, 20S)
0.338	98	Paved parking, HSG C (21S, 22S, 23S)
0.145	98	Paved roads w/curbs & sewers, HSG C (11S, 12S)
2.134	98	Unconnected pavement, HSG C (10S, 12S, 20S, 30S)
0.743	98	Unconnected roofs, HSG C (10S, 13S, 21S, 22S)
9.304	70	Woods, Good, HSG C (10S, 20S, 22S, 23S, 30S)
2.658	77	Woods, Good, HSG D (10S, 22S, 23S)
26.801	**77**	**TOTAL AREA**

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10S: (new Subcat) Runoff Area=296,484 sf 3.43% Impervious Runoff Depth>0.88"
Flow Length=1,195' Tc=33.8 min CN=73 Runoff=3.92 cfs 0.501 af

Subcatchment 11S: (new Subcat) Runoff Area=13,166 sf 23.24% Impervious Runoff Depth>1.30"
Tc=5.0 min CN=80 Runoff=0.49 cfs 0.033 af

Subcatchment 12S: (new Subcat) Runoff Area=176,265 sf 16.84% Impervious Runoff Depth>1.11"
Flow Length=226' Tc=10.2 min UI Adjusted CN=77 Runoff=4.80 cfs 0.374 af

Subcatchment 13S: (new Subcat) Runoff Area=9,487 sf 39.21% Impervious Runoff Depth>1.50"
Tc=5.0 min CN=83 Runoff=0.41 cfs 0.027 af

Subcatchment 20S: (new Subcat) Runoff Area=240,859 sf 15.33% Impervious Runoff Depth>1.16"
Flow Length=555' Tc=33.3 min UI Adjusted CN=78 Runoff=4.34 cfs 0.534 af

Subcatchment 21S: (new Subcat) Runoff Area=26,081 sf 21.48% Impervious Runoff Depth>1.11"
Flow Length=135' Slope=0.0800 '/' Tc=7.3 min UI Adjusted CN=77 Runoff=0.78 cfs 0.055 af

Subcatchment 22S: (new Subcat) Runoff Area=208,163 sf 13.37% Impervious Runoff Depth>1.05"
Flow Length=339' Tc=19.4 min UI Adjusted CN=76 Runoff=4.21 cfs 0.418 af

Subcatchment 23S: (new Subcat) Runoff Area=29,435 sf 26.14% Impervious Runoff Depth>1.23"
Flow Length=248' Tc=9.7 min CN=79 Runoff=0.91 cfs 0.069 af

Subcatchment 30S: (new Subcat) Runoff Area=167,529 sf 12.91% Impervious Runoff Depth>0.84"
Flow Length=246' Tc=27.1 min UI Adjusted CN=72 Runoff=2.28 cfs 0.268 af

Reach 10R: (new Reach) Avg. Flow Depth=0.30' Max Vel=2.62 fps Inflow=2.28 cfs 0.267 af
n=0.040 L=353.0' S=0.0368 '/' Capacity=6.07 cfs Outflow=2.26 cfs 0.266 af

Reach 11R: (new Reach) Avg. Flow Depth=0.06' Max Vel=1.79 fps Inflow=0.91 cfs 0.060 af
n=0.030 L=166.0' S=0.0723 '/' Capacity=56.21 cfs Outflow=0.85 cfs 0.060 af

Reach 12R: (new Reach) Avg. Flow Depth=0.33' Max Vel=2.58 fps Inflow=2.54 cfs 0.326 af
n=0.040 L=556.0' S=0.0324 '/' Capacity=5.69 cfs Outflow=2.50 cfs 0.323 af

Reach 21R: (new Reach) Inflow=0.78 cfs 0.055 af
Outflow=0.78 cfs 0.055 af

Reach 22R: (new Reach) Avg. Flow Depth=0.50' Max Vel=2.45 fps Inflow=4.30 cfs 0.533 af
n=0.070 L=250.0' S=0.0560 '/' Capacity=224.26 cfs Outflow=4.28 cfs 0.532 af

Reach 23R: (new Reach) Avg. Flow Depth=0.46' Max Vel=2.27 fps Inflow=4.54 cfs 0.601 af
n=0.070 L=309.0' S=0.0485 '/' Capacity=20.92 cfs Outflow=4.51 cfs 0.599 af

Pond 11P: (new Pond) Peak Elev=170.12' Storage=7 cf Inflow=0.49 cfs 0.033 af
15.0" Round Culvert n=0.013 L=52.0' S=0.0144 '/' Outflow=0.50 cfs 0.033 af

Pond 21P: (new Pond) Peak Elev=160.01' Storage=0 cf Inflow=0.78 cfs 0.055 af
15.0" Round Culvert n=0.013 L=38.0' S=0.0079 '/' Outflow=0.78 cfs 0.055 af

Pond 22P: (new Pond) Peak Elev=164.24' Storage=512 cf Inflow=4.34 cfs 0.534 af
36.0" Round Culvert w/ 12.0" inside fill n=0.020 L=40.0' S=0.0660 '/' Outflow=4.30 cfs 0.533 af

Pond 23P: (new Pond) Peak Elev=147.72' Storage=59 cf Inflow=4.54 cfs 0.601 af
36.0" Round Culvert w/ 12.0" inside fill n=0.033 L=38.0' S=0.0263 '/' Outflow=4.54 cfs 0.601 af

Pond 30P: (new Pond) Peak Elev=176.55' Storage=65 cf Inflow=2.28 cfs 0.268 af
18.0" Round Culvert w/ 9.0" inside fill n=0.025 L=65.0' S=0.0308 '/' Outflow=2.28 cfs 0.267 af

Pond SP-1: (new Pond) Inflow=8.27 cfs 1.198 af
Primary=8.27 cfs 1.198 af

Pond SP-2: (new Pond) Inflow=7.43 cfs 1.072 af
Primary=7.43 cfs 1.072 af

Pond TOTAL: (new Pond) Inflow=15.69 cfs 2.270 af
Primary=15.69 cfs 2.270 af

Total Runoff Area = 26.801 ac Runoff Volume = 2.279 af Average Runoff Depth = 1.02"
87.47% Pervious = 23.443 ac 12.53% Impervious = 3.359 ac

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10S: (new Subcat) Runoff Area=296,484 sf 3.43% Impervious Runoff Depth>1.80"
Flow Length=1,195' Tc=33.8 min CN=73 Runoff=8.27 cfs 1.021 af

Subcatchment 11S: (new Subcat) Runoff Area=13,166 sf 23.24% Impervious Runoff Depth>2.38"
Tc=5.0 min CN=80 Runoff=0.90 cfs 0.060 af

Subcatchment 12S: (new Subcat) Runoff Area=176,265 sf 16.84% Impervious Runoff Depth>2.13"
Flow Length=226' Tc=10.2 min UI Adjusted CN=77 Runoff=9.32 cfs 0.717 af

Subcatchment 13S: (new Subcat) Runoff Area=9,487 sf 39.21% Impervious Runoff Depth>2.64"
Tc=5.0 min CN=83 Runoff=0.72 cfs 0.048 af

Subcatchment 20S: (new Subcat) Runoff Area=240,859 sf 15.33% Impervious Runoff Depth>2.19"
Flow Length=555' Tc=33.3 min UI Adjusted CN=78 Runoff=8.27 cfs 1.008 af

Subcatchment 21S: (new Subcat) Runoff Area=26,081 sf 21.48% Impervious Runoff Depth>2.13"
Flow Length=135' Slope=0.0800 '/' Tc=7.3 min UI Adjusted CN=77 Runoff=1.52 cfs 0.106 af

Subcatchment 22S: (new Subcat) Runoff Area=208,163 sf 13.37% Impervious Runoff Depth>2.04"
Flow Length=339' Tc=19.4 min UI Adjusted CN=76 Runoff=8.38 cfs 0.812 af

Subcatchment 23S: (new Subcat) Runoff Area=29,435 sf 26.14% Impervious Runoff Depth>2.29"
Flow Length=248' Tc=9.7 min CN=79 Runoff=1.70 cfs 0.129 af

Subcatchment 30S: (new Subcat) Runoff Area=167,529 sf 12.91% Impervious Runoff Depth>1.73"
Flow Length=246' Tc=27.1 min UI Adjusted CN=72 Runoff=4.95 cfs 0.555 af

Reach 10R: (new Reach) Avg. Flow Depth=0.45' Max Vel=3.27 fps Inflow=5.44 cfs 0.554 af
n=0.040 L=353.0' S=0.0368 '/' Capacity=6.07 cfs Outflow=4.90 cfs 0.552 af

Reach 11R: (new Reach) Avg. Flow Depth=0.08' Max Vel=2.19 fps Inflow=1.62 cfs 0.108 af
n=0.030 L=166.0' S=0.0723 '/' Capacity=56.21 cfs Outflow=1.54 cfs 0.107 af

Reach 12R: (new Reach) Avg. Flow Depth=0.48' Max Vel=3.18 fps Inflow=5.37 cfs 0.660 af
n=0.040 L=556.0' S=0.0324 '/' Capacity=5.69 cfs Outflow=5.25 cfs 0.657 af

Reach 21R: (new Reach) Inflow=1.52 cfs 0.106 af
Outflow=1.52 cfs 0.106 af

Reach 22R: (new Reach) Avg. Flow Depth=0.69' Max Vel=2.91 fps Inflow=8.17 cfs 1.007 af
n=0.070 L=250.0' S=0.0560 '/' Capacity=224.26 cfs Outflow=8.13 cfs 1.005 af

Reach 23R: (new Reach) Avg. Flow Depth=0.64' Max Vel=2.73 fps Inflow=8.61 cfs 1.134 af
n=0.070 L=309.0' S=0.0485 '/' Capacity=20.92 cfs Outflow=8.56 cfs 1.131 af

Pond 11P: (new Pond) Peak Elev=170.26' Storage=13 cf Inflow=0.90 cfs 0.060 af
15.0" Round Culvert n=0.013 L=52.0' S=0.0144 '/' Outflow=0.91 cfs 0.060 af

Pond 21P: (new Pond) Peak Elev=160.02' Storage=0 cf Inflow=1.52 cfs 0.106 af
15.0" Round Culvert n=0.013 L=38.0' S=0.0079 '/' Outflow=1.52 cfs 0.106 af

Pond 22P: (new Pond) Peak Elev=164.61' Storage=1,115 cf Inflow=8.27 cfs 1.008 af
36.0" Round Culvert w/ 12.0" inside fill n=0.020 L=40.0' S=0.0660 '/' Outflow=8.17 cfs 1.007 af

Pond 23P: (new Pond) Peak Elev=148.10' Storage=129 cf Inflow=8.61 cfs 1.134 af
36.0" Round Culvert w/ 12.0" inside fill n=0.033 L=38.0' S=0.0263 '/' Outflow=8.61 cfs 1.134 af

Pond 30P: (new Pond) Peak Elev=180.60' Storage=405 cf Inflow=4.95 cfs 0.555 af
18.0" Round Culvert w/ 9.0" inside fill n=0.025 L=65.0' S=0.0308 '/' Outflow=5.44 cfs 0.554 af

Pond SP-1: (new Pond) Inflow=16.86 cfs 2.394 af
Primary=16.86 cfs 2.394 af

Pond SP-2: (new Pond) Inflow=14.54 cfs 2.049 af
Primary=14.54 cfs 2.049 af

Pond TOTAL: (new Pond) Inflow=31.36 cfs 4.442 af
Primary=31.36 cfs 4.442 af

Total Runoff Area = 26.801 ac Runoff Volume = 4.454 af Average Runoff Depth = 1.99"
87.47% Pervious = 23.443 ac 12.53% Impervious = 3.359 ac

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 10S: (new Subcat) Runoff Area=296,484 sf 3.43% Impervious Runoff Depth>2.61"
Flow Length=1,195' Tc=33.8 min CN=73 Runoff=12.07 cfs 1.481 af

Subcatchment 11S: (new Subcat) Runoff Area=13,166 sf 23.24% Impervious Runoff Depth>3.29"
Tc=5.0 min CN=80 Runoff=1.24 cfs 0.083 af

Subcatchment 12S: (new Subcat) Runoff Area=176,265 sf 16.84% Impervious Runoff Depth>3.00"
Flow Length=226' Tc=10.2 min UI Adjusted CN=77 Runoff=13.12 cfs 1.011 af

Subcatchment 13S: (new Subcat) Runoff Area=9,487 sf 39.21% Impervious Runoff Depth>3.58"
Tc=5.0 min CN=83 Runoff=0.97 cfs 0.065 af

Subcatchment 20S: (new Subcat) Runoff Area=240,859 sf 15.33% Impervious Runoff Depth>3.07"
Flow Length=555' Tc=33.3 min UI Adjusted CN=78 Runoff=11.57 cfs 1.414 af

Subcatchment 21S: (new Subcat) Runoff Area=26,081 sf 21.48% Impervious Runoff Depth>3.00"
Flow Length=135' Slope=0.0800 '/' Tc=7.3 min UI Adjusted CN=77 Runoff=2.13 cfs 0.150 af

Subcatchment 22S: (new Subcat) Runoff Area=208,163 sf 13.37% Impervious Runoff Depth>2.90"
Flow Length=339' Tc=19.4 min UI Adjusted CN=76 Runoff=11.92 cfs 1.154 af

Subcatchment 23S: (new Subcat) Runoff Area=29,435 sf 26.14% Impervious Runoff Depth>3.19"
Flow Length=248' Tc=9.7 min CN=79 Runoff=2.35 cfs 0.180 af

Subcatchment 30S: (new Subcat) Runoff Area=167,529 sf 12.91% Impervious Runoff Depth>2.53"
Flow Length=246' Tc=27.1 min UI Adjusted CN=72 Runoff=7.28 cfs 0.811 af

Reach 10R: (new Reach) Avg. Flow Depth=0.55' Max Vel=3.63 fps Inflow=7.32 cfs 0.810 af
n=0.040 L=353.0' S=0.0368 '/' Capacity=6.07 cfs Outflow=7.22 cfs 0.808 af

Reach 11R: (new Reach) Avg. Flow Depth=0.09' Max Vel=2.42 fps Inflow=2.21 cfs 0.148 af
n=0.030 L=166.0' S=0.0723 '/' Capacity=56.21 cfs Outflow=2.11 cfs 0.148 af

Reach 12R: (new Reach) Avg. Flow Depth=0.60' Max Vel=3.52 fps Inflow=7.93 cfs 0.956 af
n=0.040 L=556.0' S=0.0324 '/' Capacity=5.69 cfs Outflow=7.85 cfs 0.952 af

Reach 21R: (new Reach) Inflow=2.12 cfs 0.150 af
Outflow=2.12 cfs 0.150 af

Reach 22R: (new Reach) Avg. Flow Depth=0.81' Max Vel=3.18 fps Inflow=11.38 cfs 1.413 af
n=0.070 L=250.0' S=0.0560 '/' Capacity=224.26 cfs Outflow=11.32 cfs 1.411 af

Reach 23R: (new Reach) Avg. Flow Depth=0.76' Max Vel=2.99 fps Inflow=11.98 cfs 1.590 af
n=0.070 L=309.0' S=0.0485 '/' Capacity=20.92 cfs Outflow=11.92 cfs 1.586 af

Pond 11P: (new Pond) Peak Elev=170.36' Storage=18 cf Inflow=1.24 cfs 0.083 af
15.0" Round Culvert n=0.013 L=52.0' S=0.0144 '/' Outflow=1.25 cfs 0.083 af

Pond 21P: (new Pond) Peak Elev=160.14' Storage=3 cf Inflow=2.13 cfs 0.150 af
15.0" Round Culvert n=0.013 L=38.0' S=0.0079 '/' Outflow=2.12 cfs 0.150 af

Pond 22P: (new Pond) Peak Elev=164.88' Storage=1,703 cf Inflow=11.57 cfs 1.414 af
36.0" Round Culvert w/ 12.0" inside fill n=0.020 L=40.0' S=0.0660 '/' Outflow=11.38 cfs 1.413 af

Pond 23P: (new Pond) Peak Elev=148.38' Storage=205 cf Inflow=11.98 cfs 1.590 af
36.0" Round Culvert w/ 12.0" inside fill n=0.033 L=38.0' S=0.0263 '/' Outflow=11.98 cfs 1.590 af

Pond 30P: (new Pond) Peak Elev=185.55' Storage=405 cf Inflow=7.28 cfs 0.811 af
18.0" Round Culvert w/ 9.0" inside fill n=0.025 L=65.0' S=0.0308 '/' Outflow=7.32 cfs 0.810 af

Pond SP-1: (new Pond) Inflow=25.18 cfs 3.445 af
Primary=25.18 cfs 3.445 af

Pond SP-2: (new Pond) Inflow=20.66 cfs 2.890 af
Primary=20.66 cfs 2.890 af

Pond TOTAL: (new Pond) Inflow=45.55 cfs 6.335 af
Primary=45.55 cfs 6.335 af

Total Runoff Area = 26.801 ac Runoff Volume = 6.349 af Average Runoff Depth = 2.84"
87.47% Pervious = 23.443 ac 12.53% Impervious = 3.359 ac

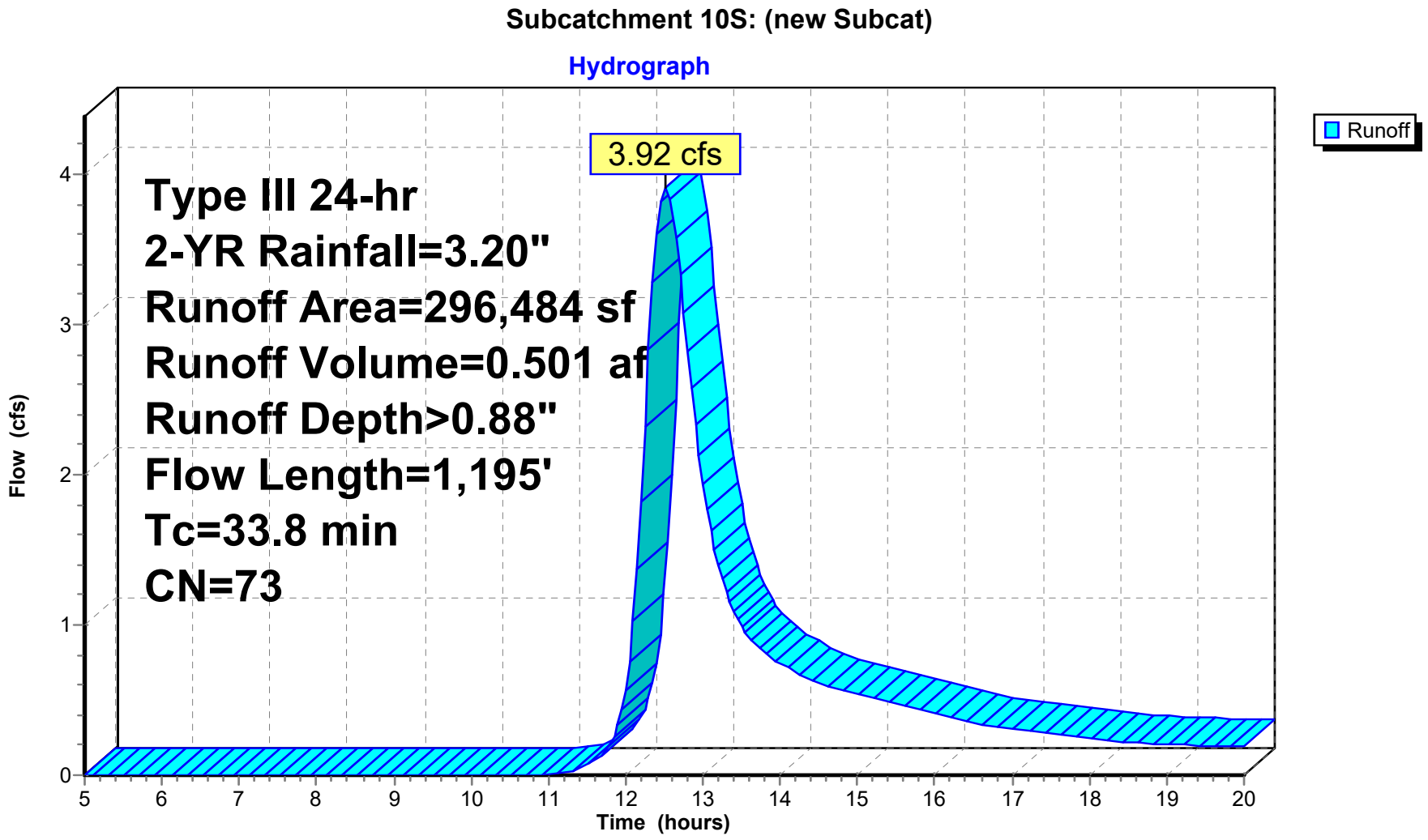
Summary for Subcatchment 10S: (new Subcat)

Runoff = 3.92 cfs @ 12.52 hrs, Volume= 0.501 af, Depth> 0.88"
Routed to Pond SP-1 : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.20"

Area (sf)	CN	Description
2,205	98	Unconnected roofs, HSG C
7,964	98	Unconnected pavement, HSG C
13,000	74	>75% Grass cover, Good, HSG C
13,000	80	>75% Grass cover, Good, HSG D
194,542	70	Woods, Good, HSG C
65,773	77	Woods, Good, HSG D
296,484	73	Weighted Average
286,315		96.57% Pervious Area
10,169		3.43% Impervious Area
10,169		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.9	150	0.0500	0.12		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
4.2	180	0.0200	0.71		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
8.7	865	0.0400	1.67	2.08	**Trap/Vee/Rect Channel Flow, C-D** Bot.W=1.00' D=0.50' Z= 3.0 '/' Top.W=4.00' n= 0.080 Earth, long dense weeds
33.8	1,195	Total			



Summary for Subcatchment 11S: (new Subcat)

Runoff = 0.49 cfs @ 12.08 hrs, Volume= 0.033 af, Depth> 1.30"
Routed to Pond 11P : (new Pond)

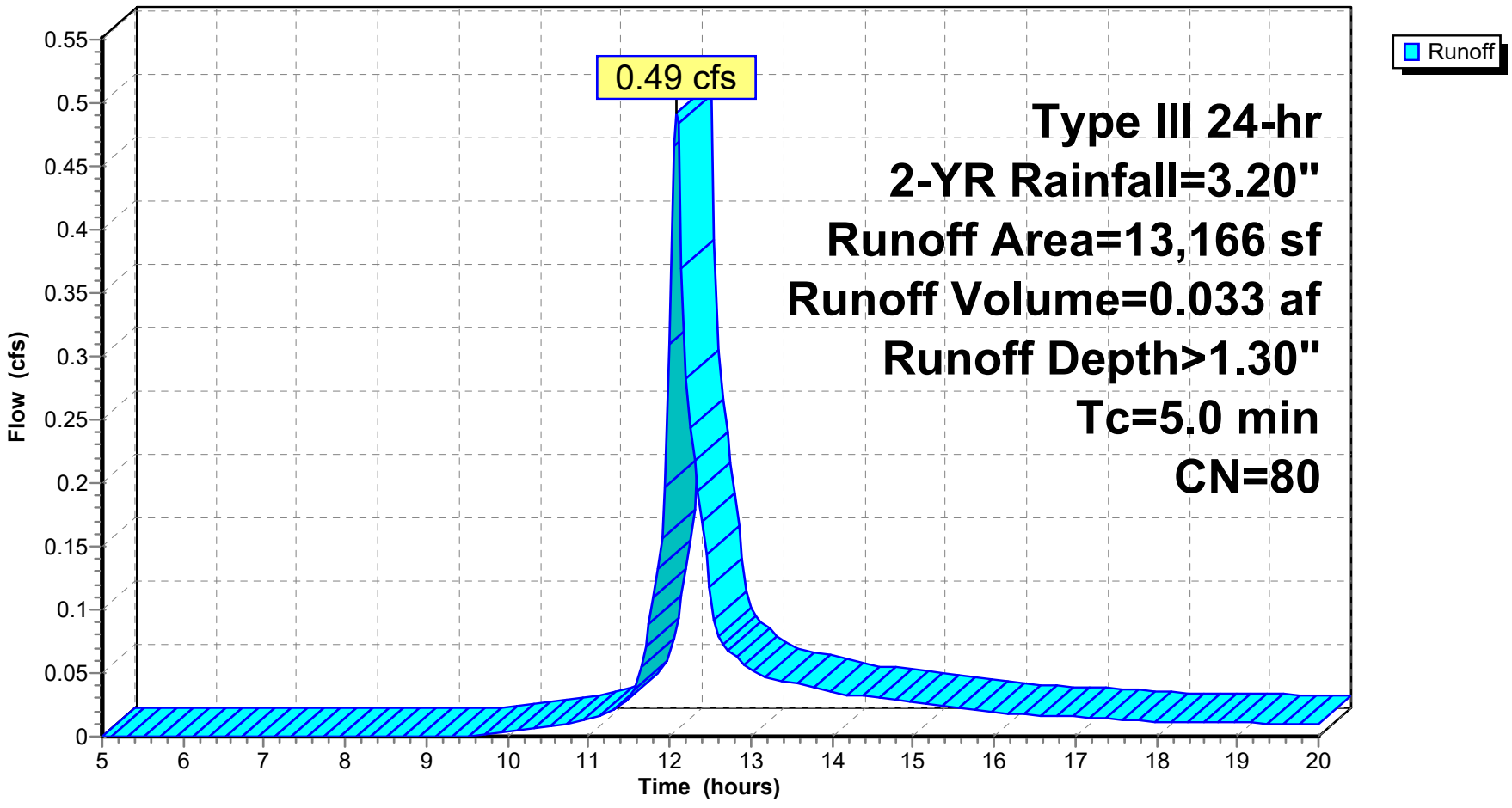
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.20"

Area (sf)	CN	Description
3,060	98	Paved roads w/curbs & sewers, HSG C
10,106	74	>75% Grass cover, Good, HSG C
13,166	80	Weighted Average
10,106		76.76% Pervious Area
3,060		23.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, MIN**

Subcatchment 11S: (new Subcat)

Hydrograph



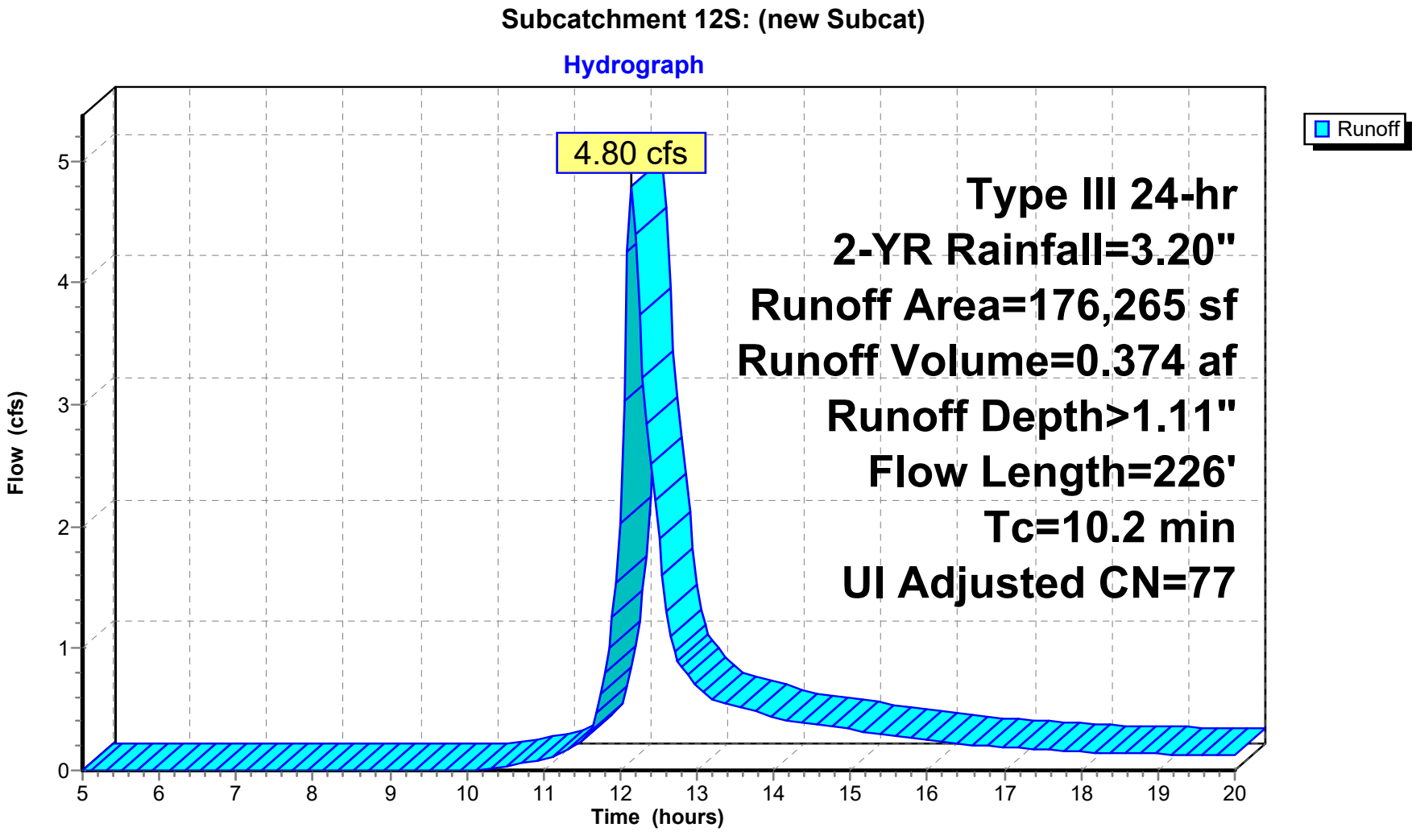
Summary for Subcatchment 12S: (new Subcat)

Runoff = 4.80 cfs @ 12.15 hrs, Volume= 0.374 af, Depth> 1.11"
Routed to Pond SP-1 : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.20"

Area (sf)	CN	Adj	Description
26,420	98		Unconnected pavement, HSG C
3,256	98		Paved roads w/curbs & sewers, HSG C
116,589	74		>75% Grass cover, Good, HSG C
30,000	80		>75% Grass cover, Good, HSG D
176,265	79	77	Weighted Average, UI Adjusted
146,589			83.16% Pervious Area
29,676			16.84% Impervious Area
26,420			89.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.5	150	0.0500	0.26		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"
0.7	76	0.0700	1.85		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
10.2	226	Total			



Summary for Subcatchment 13S: (new Subcat)

Runoff = 0.41 cfs @ 12.08 hrs, Volume= 0.027 af, Depth> 1.50"
Routed to Reach 11R : (new Reach)

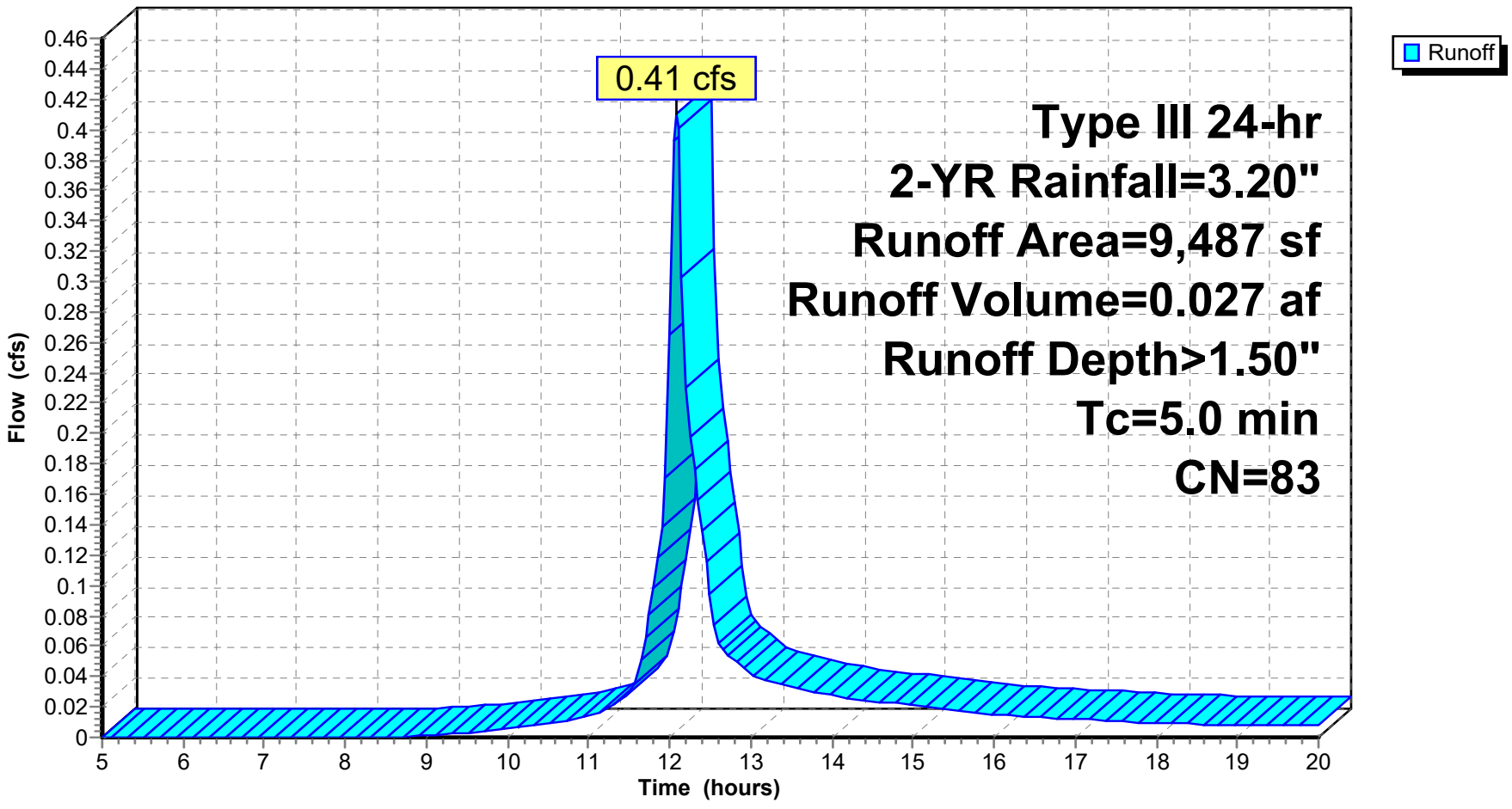
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.20"

Area (sf)	CN	Description
3,720	98	Unconnected roofs, HSG C
5,767	74	>75% Grass cover, Good, HSG C
9,487	83	Weighted Average
5,767		60.79% Pervious Area
3,720		39.21% Impervious Area
3,720		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0					**Direct Entry, MIN**

Subcatchment 13S: (new Subcat)

Hydrograph



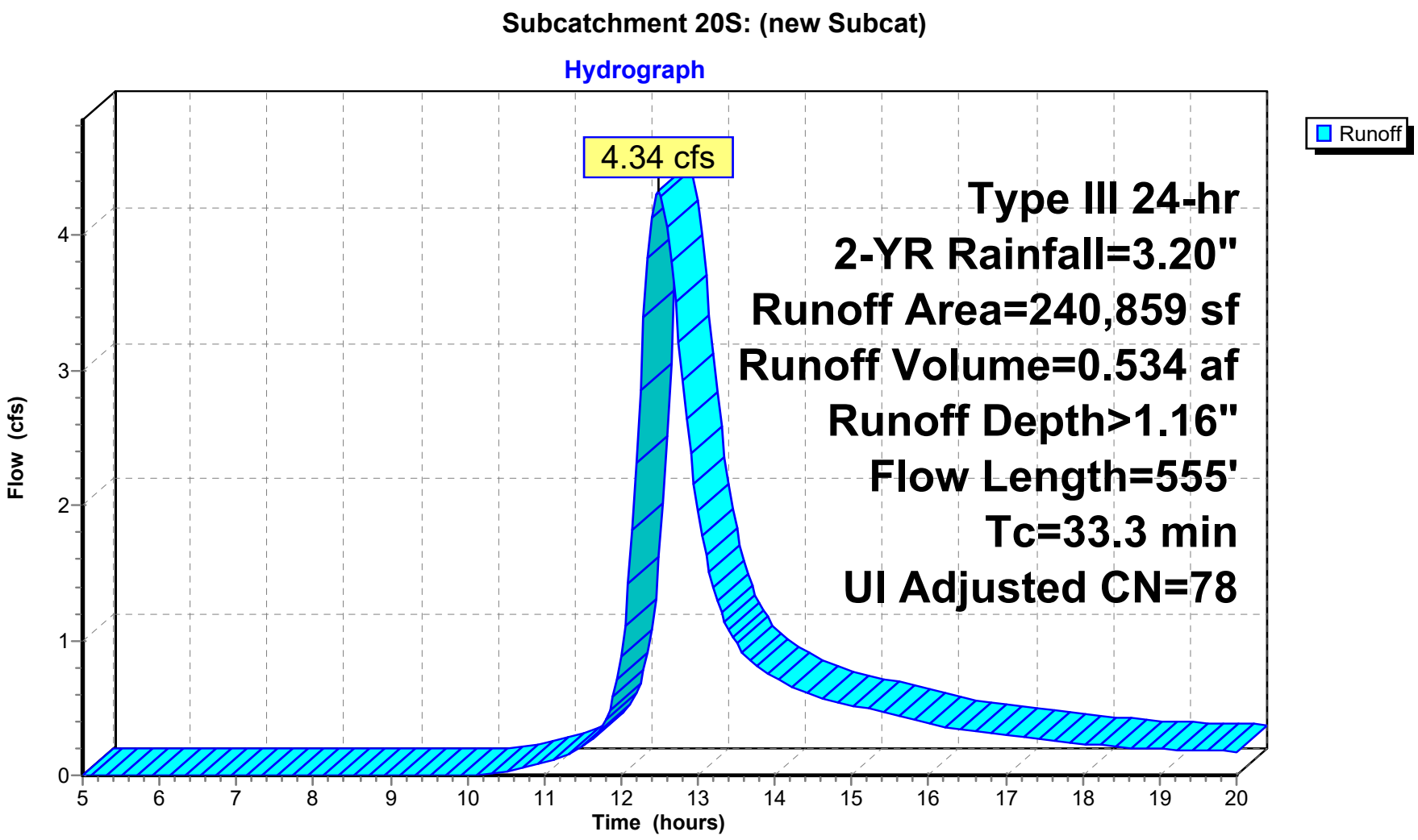
Summary for Subcatchment 20S: (new Subcat)

Runoff = 4.34 cfs @ 12.49 hrs, Volume= 0.534 af, Depth> 1.16"
Routed to Pond 22P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.20"

Area (sf)	CN	Adj	Description
11,594	98		Unconnected pavement, HSG C
5,520	98		Unconnected pavement, HSG C
19,815	98		Unconnected pavement, HSG C
30,000	70		Woods, Good, HSG C
86,965	74		>75% Grass cover, Good, HSG C
86,965	80		>75% Grass cover, Good, HSG D
240,859	79	78	Weighted Average, UI Adjusted
203,930			84.67% Pervious Area
36,929			15.33% Impervious Area
36,929			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
26.5	150	0.0100	0.09		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.10"
6.8	405	0.0200	0.99		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
33.3	555	Total			



Summary for Subcatchment 21S: (new Subcat)

Runoff = 0.78 cfs @ 12.11 hrs, Volume= 0.055 af, Depth> 1.11"
Routed to Pond 21P : (new Pond)

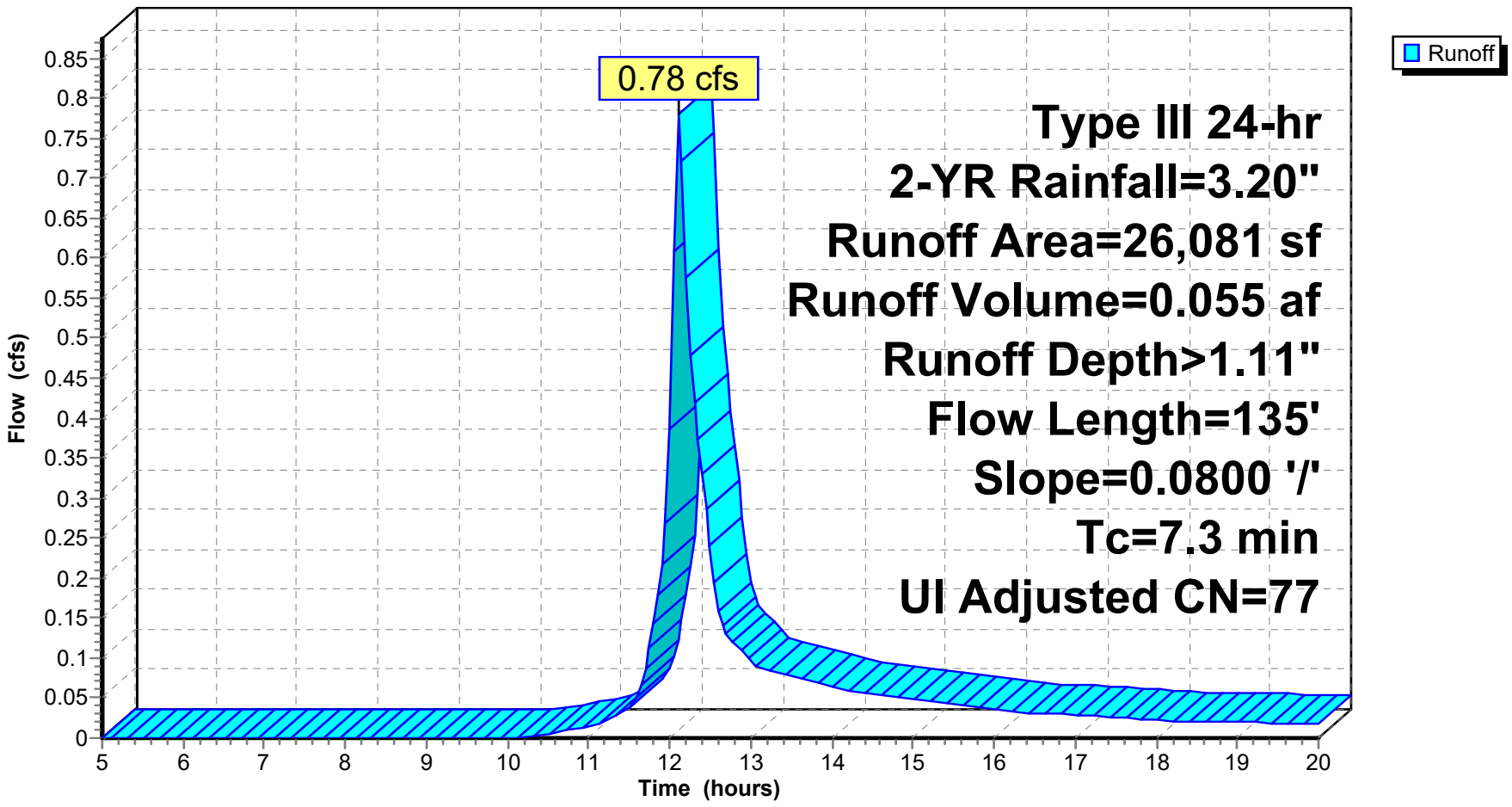
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.20"

Area (sf)	CN	Adj	Description
3,803	98		Unconnected roofs, HSG C
1,800	98		Paved parking, HSG C
20,478	74		>75% Grass cover, Good, HSG C
26,081	79	77	Weighted Average, UI Adjusted
20,478			78.52% Pervious Area
5,603			21.48% Impervious Area
3,803			67.87% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.3	135	0.0800	0.31		**Sheet Flow, A-B** Grass: Short n= 0.150 P2= 3.10"

Subcatchment 21S: (new Subcat)

Hydrograph



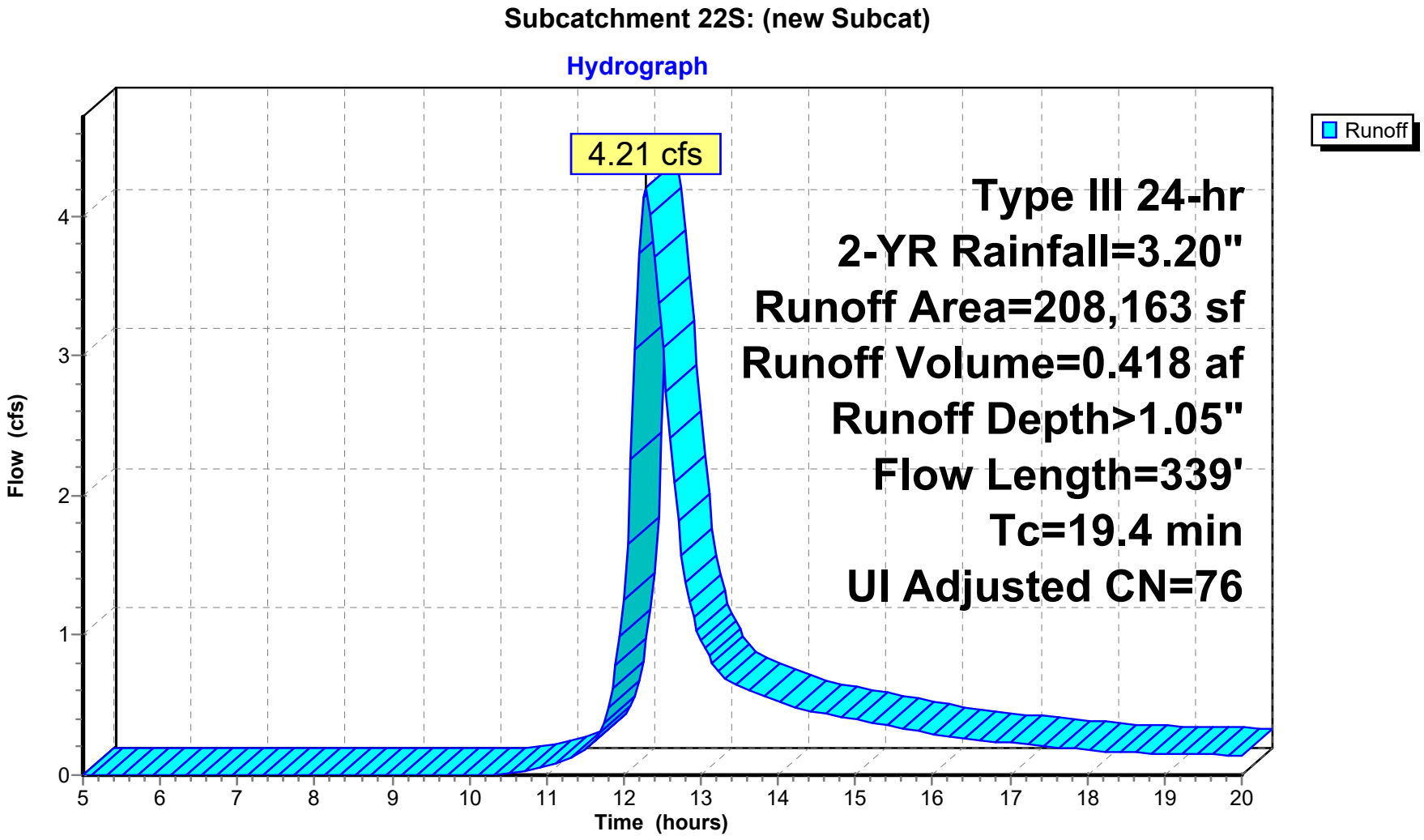
Summary for Subcatchment 22S: (new Subcat)

Runoff = 4.21 cfs @ 12.29 hrs, Volume= 0.418 af, Depth> 1.05"
Routed to Pond SP-2 : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.20"

Area (sf)	CN	Adj	Description
5,208	98		Paved parking, HSG C
22,617	98		Unconnected roofs, HSG C
95,338	74		>75% Grass cover, Good, HSG C
45,000	77		Woods, Good, HSG D
40,000	70		Woods, Good, HSG C
208,163	77	76	Weighted Average, UI Adjusted
180,338			86.63% Pervious Area
27,825			13.37% Impervious Area
22,617			81.28% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
17.1	150	0.0300	0.15		**Sheet Flow, A-B** Grass: Dense n= 0.240 P2= 3.10"
2.2	189	0.0400	1.40		**Shallow Concentrated Flow, B-C** Short Grass Pasture Kv= 7.0 fps
19.4	339	Total			



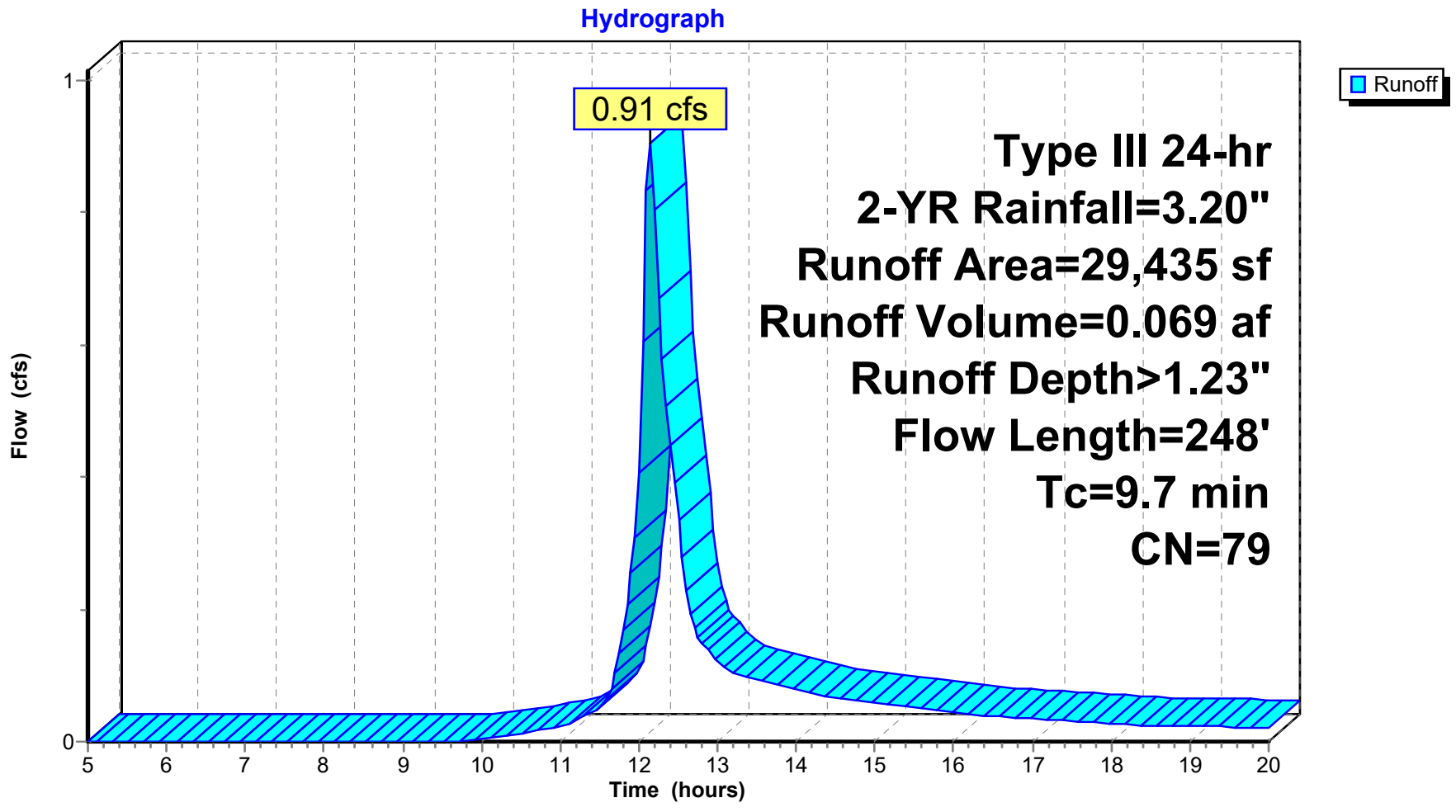
Summary for Subcatchment 23S: (new Subcat)

Runoff = 0.91 cfs @ 12.15 hrs, Volume= 0.069 af, Depth> 1.23"
Routed to Pond 23P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.20"

Area (sf)	CN	Description
7,695	98	Paved parking, HSG C
16,740	70	Woods, Good, HSG C
5,000	77	Woods, Good, HSG D
29,435	79	Weighted Average
21,740		73.86% Pervious Area
7,695		26.14% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.9	69	0.0900	0.13		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
0.8	179	0.0600	3.88	23.25	**Trap/Vee/Rect Channel Flow, B-C** Bot.W=3.00' D=1.00' Z= 3.0 '/' Top.W=9.00' n= 0.070 Sluggish weedy reaches w/pools
9.7	248	Total			



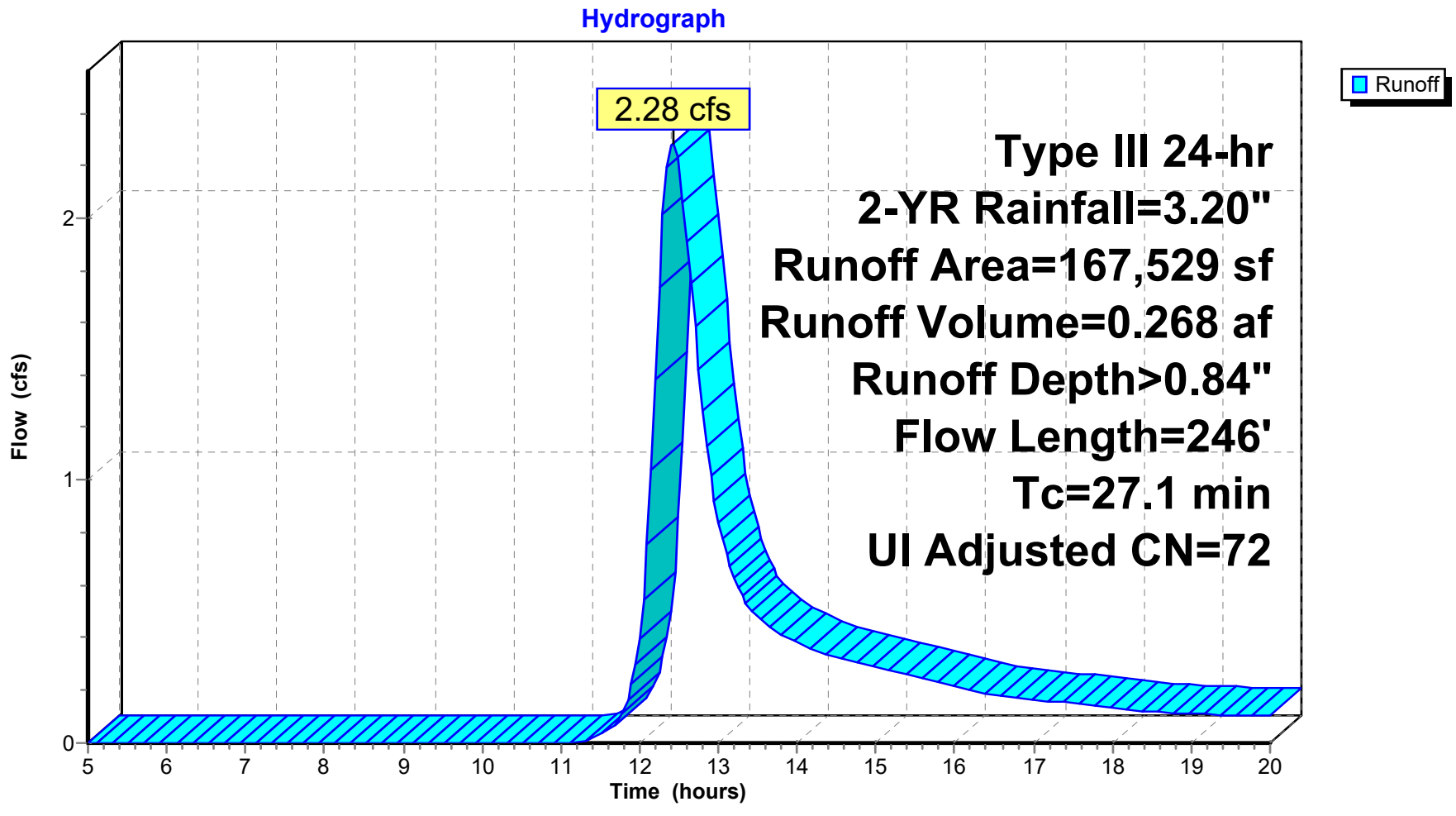
Summary for Subcatchment 30S: (new Subcat)

Runoff = 2.28 cfs @ 12.42 hrs, Volume= 0.268 af, Depth> 0.84"
Routed to Pond 30P : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type III 24-hr 2-YR Rainfall=3.20"

Area (sf)	CN	Adj	Description
21,631	98		Unconnected pavement, HSG C
124,015	70		Woods, Good, HSG C
21,883	74		>75% Grass cover, Good, HSG C
167,529	74	72	Weighted Average, UI Adjusted
145,898			87.09% Pervious Area
21,631			12.91% Impervious Area
21,631			100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.7	150	0.0300	0.10		**Sheet Flow, A-B** Woods: Light underbrush n= 0.400 P2= 3.10"
1.4	96	0.0500	1.12		**Shallow Concentrated Flow, B-C** Woodland Kv= 5.0 fps
27.1	246	Total			



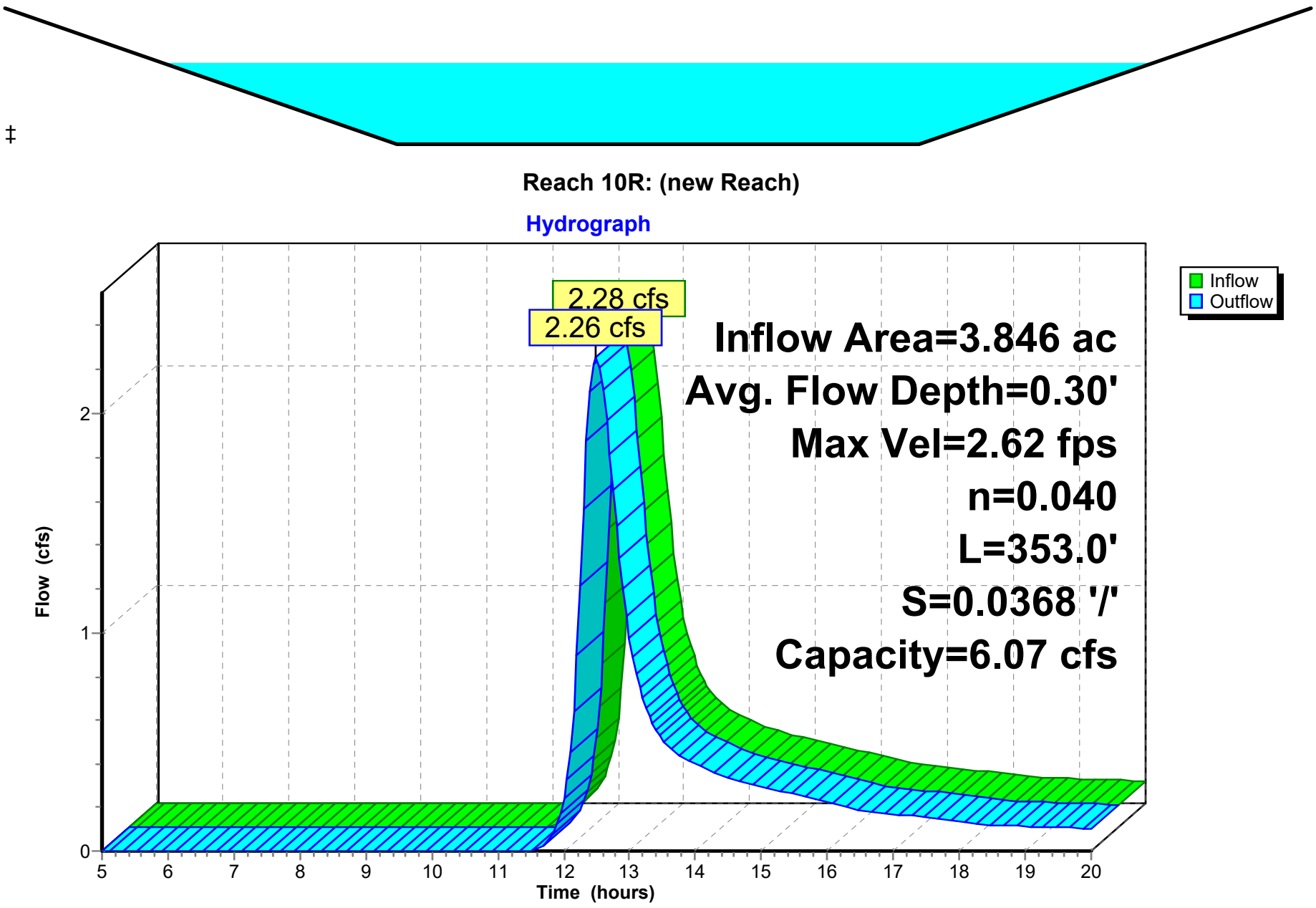
Summary for Reach 10R: (new Reach)

Inflow Area = 3.846 ac, 12.91% Impervious, Inflow Depth > 0.83" for 2-YR event
Inflow = 2.28 cfs @ 12.43 hrs, Volume= 0.267 af
Outflow = 2.26 cfs @ 12.50 hrs, Volume= 0.266 af, Atten= 1%, Lag= 4.0 min
Routed to Reach 12R : (new Reach)

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.62 fps, Min. Travel Time= 2.2 min
Avg. Velocity = 1.32 fps, Avg. Travel Time= 4.5 min

Peak Storage= 306 cf @ 12.46 hrs
Average Depth at Peak Storage= 0.30' , Surface Width= 3.79'
Bank-Full Depth= 0.50' Flow Area= 1.8 sf, Capacity= 6.07 cfs

2.00' x 0.50' deep channel, n= 0.040 Winding stream, pools & shoals
Side Slope Z-value= 3.0 '/' Top Width= 5.00'
Length= 353.0' Slope= 0.0368 '/'
Inlet Invert= 169.00', Outlet Invert= 156.00'



Summary for Reach 11R: (new Reach)

Inflow Area = 0.520 ac, 29.93% Impervious, Inflow Depth > 1.38" for 2-YR event
Inflow = 0.91 cfs @ 12.08 hrs, Volume= 0.060 af
Outflow = 0.85 cfs @ 12.13 hrs, Volume= 0.060 af, Atten= 7%, Lag= 2.8 min
Routed to Reach 12R : (new Reach)

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.79 fps, Min. Travel Time= 1.5 min
Avg. Velocity = 0.58 fps, Avg. Travel Time= 4.7 min

Peak Storage= 83 cf @ 12.10 hrs
Average Depth at Peak Storage= 0.06' , Surface Width= 10.20'
Bank-Full Depth= 0.50' Flow Area= 9.0 sf, Capacity= 56.21 cfs

8.00' x 0.50' deep channel, n= 0.030 Short grass
Side Slope Z-value= 20.0 '/' Top Width= 28.00'
Length= 166.0' Slope= 0.0723 '/'
Inlet Invert= 168.00', Outlet Invert= 156.00'

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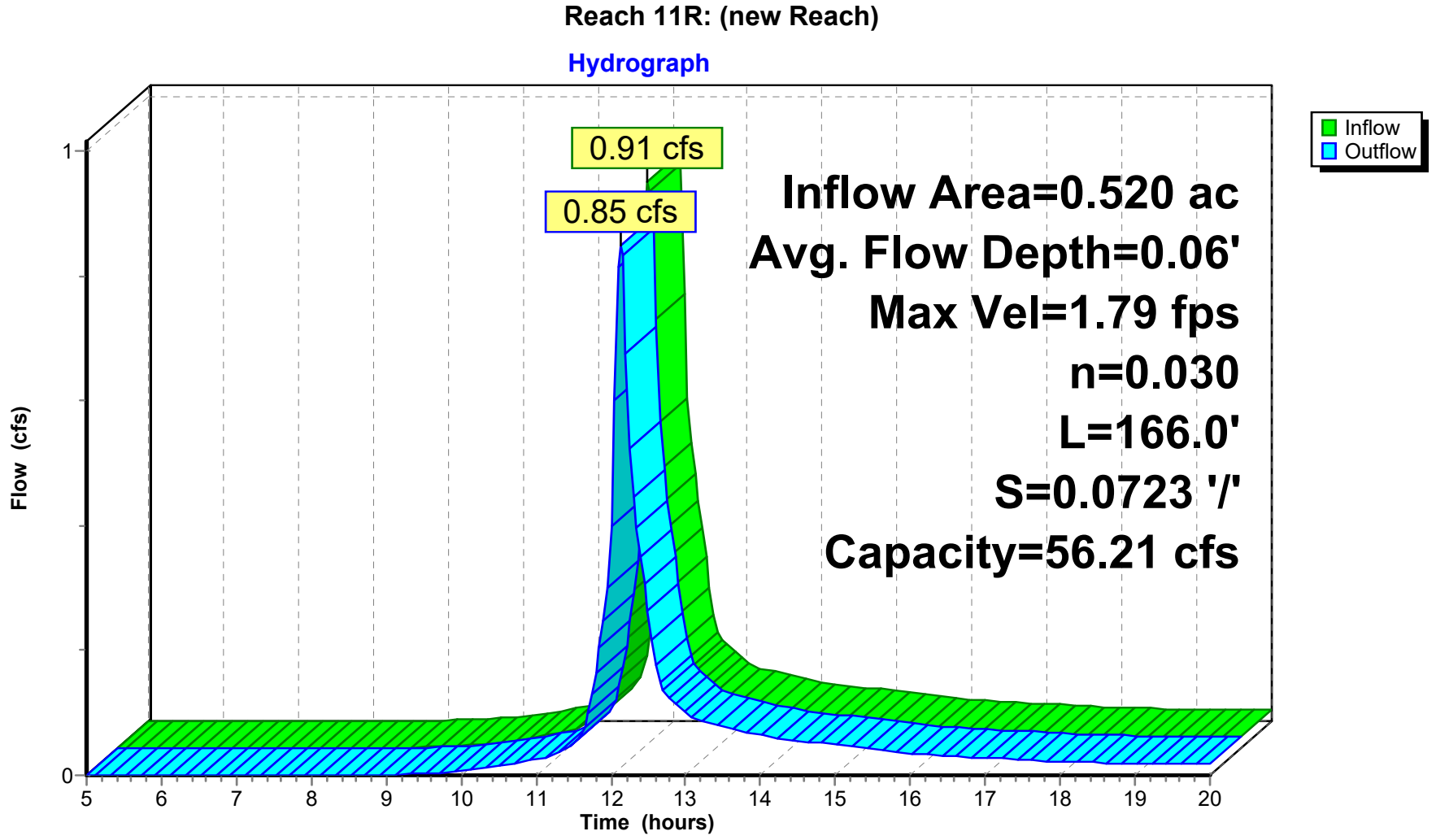


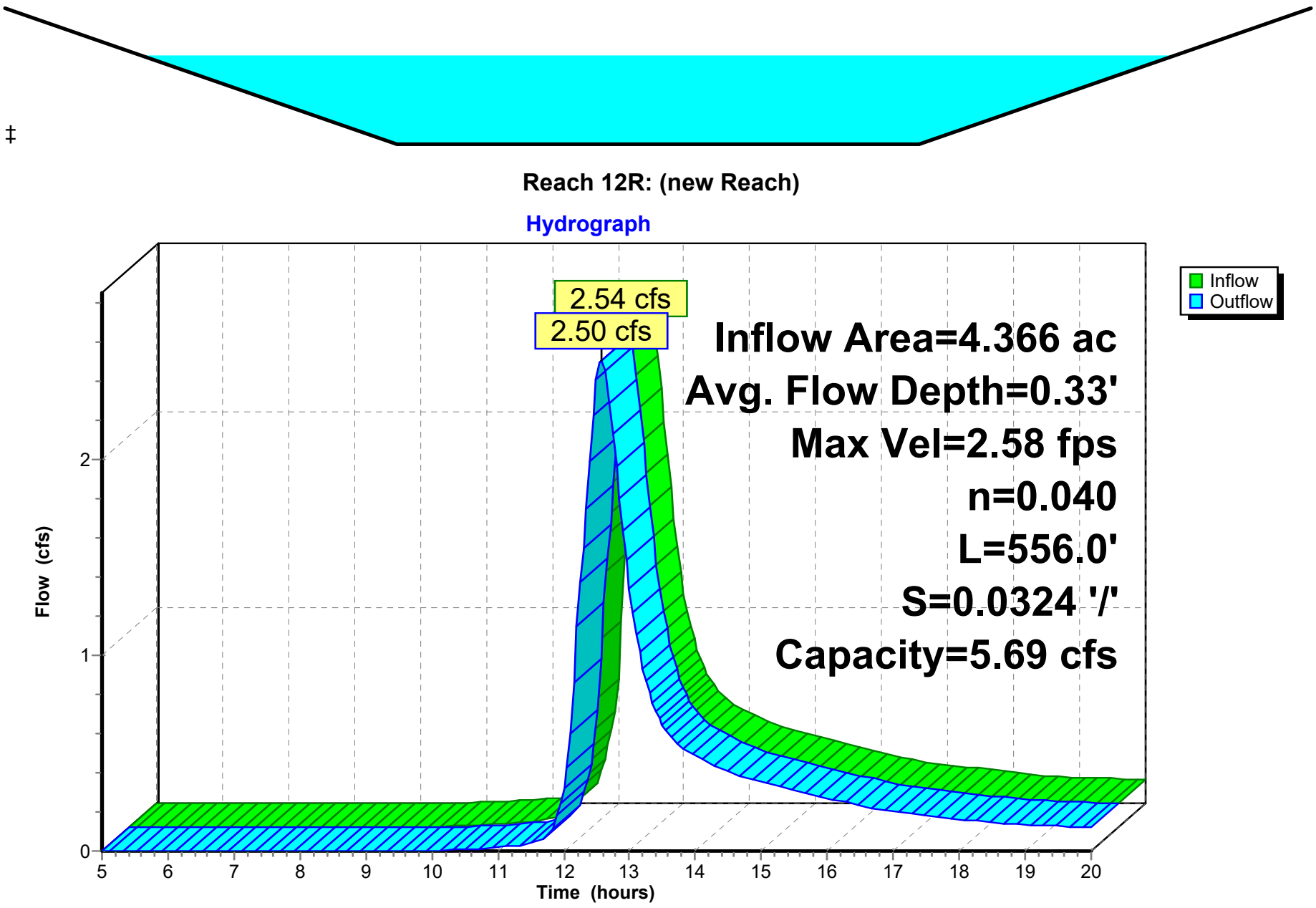
Summary for Reach 12R: (new Reach)

Inflow Area = 4.366 ac, 14.94% Impervious, Inflow Depth > 0.89" for 2-YR event
Inflow = 2.54 cfs @ 12.47 hrs, Volume= 0.326 af
Outflow = 2.50 cfs @ 12.57 hrs, Volume= 0.323 af, Atten= 2%, Lag= 6.3 min
Routed to Pond SP-1 : (new Pond)

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.58 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 1.10 fps, Avg. Travel Time= 8.4 min

Peak Storage= 541 cf @ 12.51 hrs
Average Depth at Peak Storage= 0.33' , Surface Width= 3.96'
Bank-Full Depth= 0.50' Flow Area= 1.8 sf, Capacity= 5.69 cfs

2.00' x 0.50' deep channel, n= 0.040 Earth, cobble bottom, clean sides
Side Slope Z-value= 3.0 '/' Top Width= 5.00'
Length= 556.0' Slope= 0.0324 '/'
Inlet Invert= 156.00', Outlet Invert= 138.00'

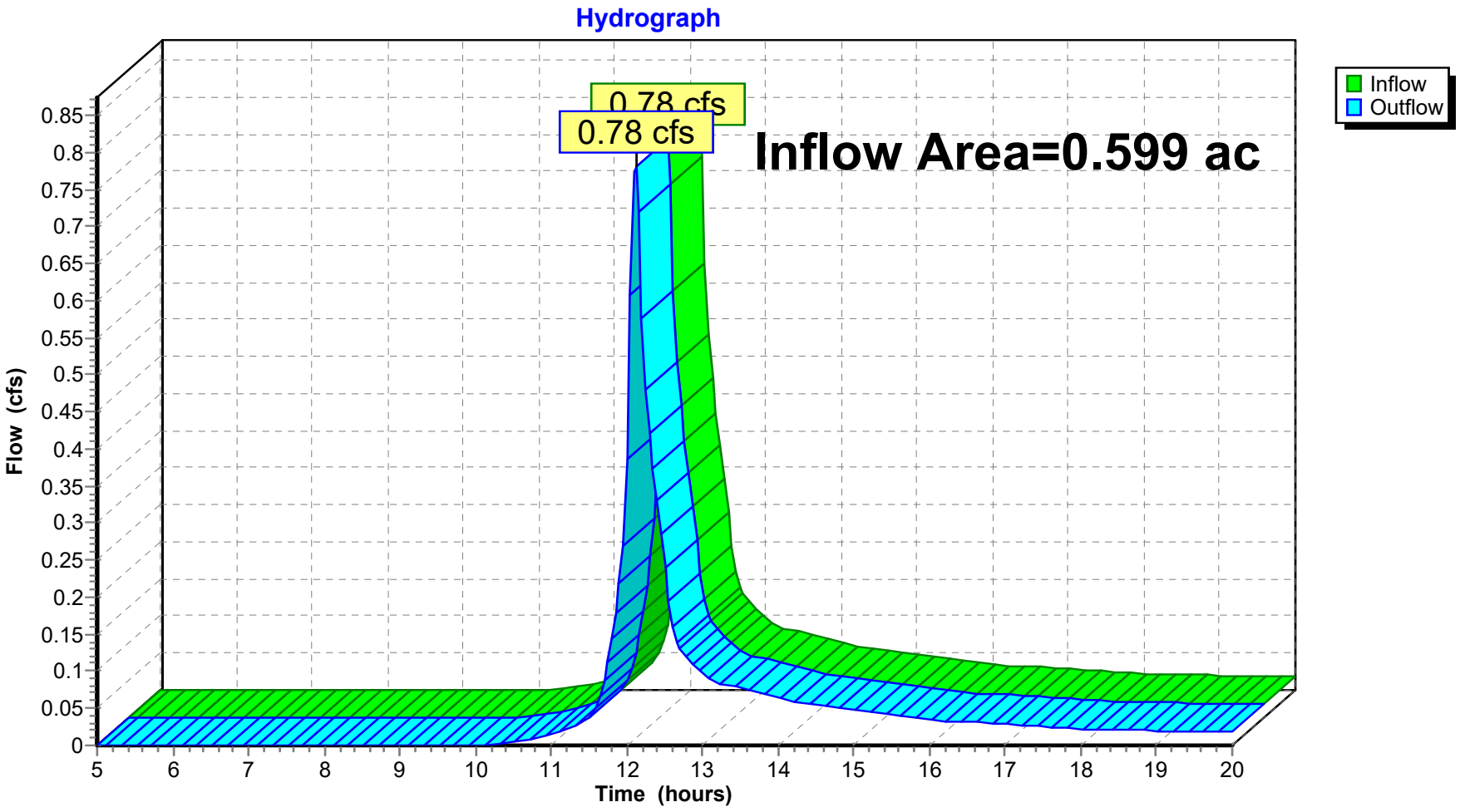


Summary for Reach 21R: (new Reach)

Inflow Area = 0.599 ac, 21.48% Impervious, Inflow Depth > 1.11" for 2-YR event
Inflow = 0.78 cfs @ 12.11 hrs, Volume= 0.055 af
Outflow = 0.78 cfs @ 12.11 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.0 min
Routed to Pond SP-2 : (new Pond)

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 21R: (new Reach)



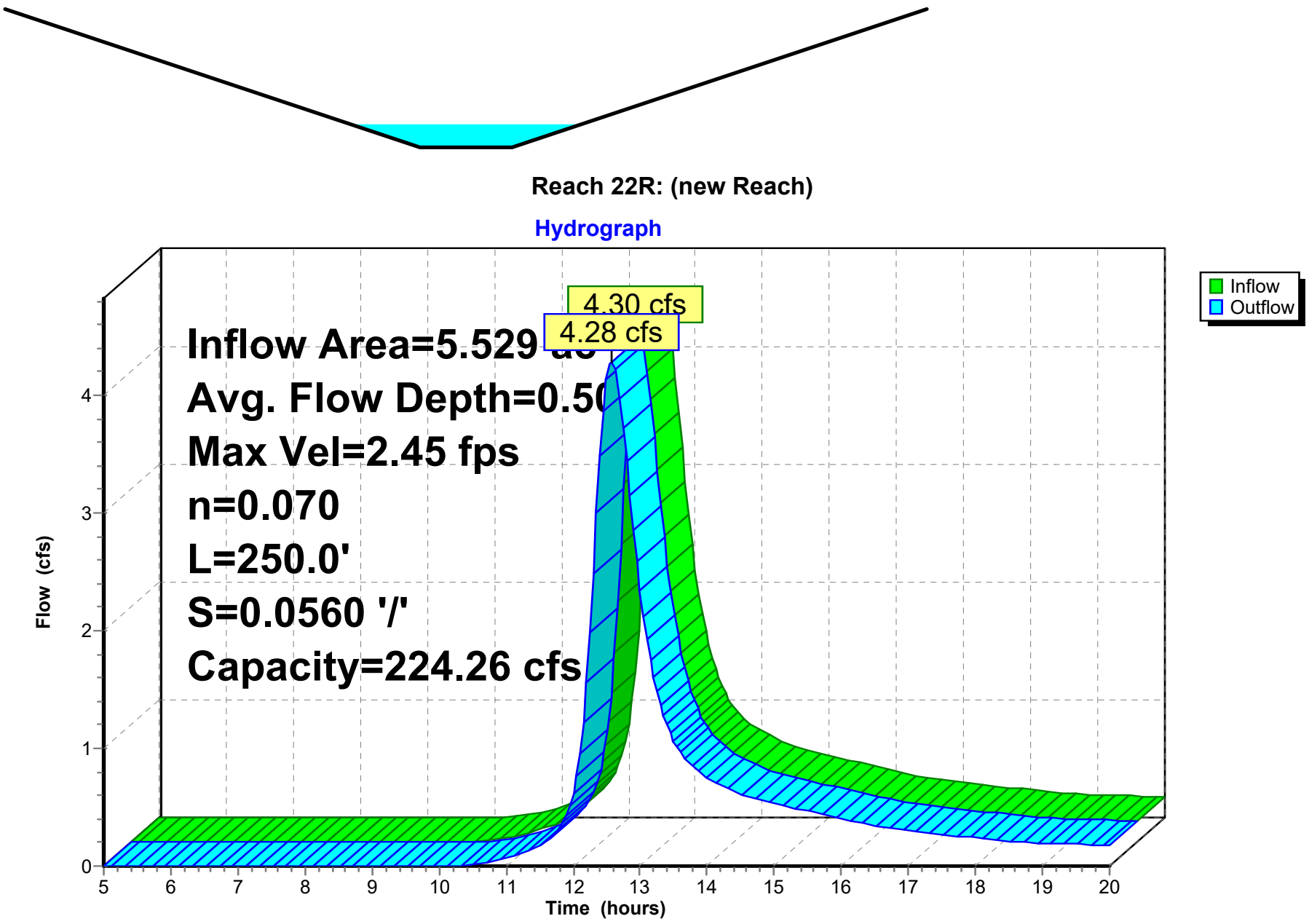
Summary for Reach 22R: (new Reach)

Inflow Area = 5.529 ac, 15.33% Impervious, Inflow Depth > 1.16" for 2-YR event
Inflow = 4.30 cfs @ 12.53 hrs, Volume= 0.533 af
Outflow = 4.28 cfs @ 12.58 hrs, Volume= 0.532 af, Atten= 1%, Lag= 3.0 min
Routed to Pond 23P : (new Pond)

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.45 fps, Min. Travel Time= 1.7 min
Avg. Velocity = 1.20 fps, Avg. Travel Time= 3.5 min

Peak Storage= 439 cf @ 12.55 hrs
Average Depth at Peak Storage= 0.50' , Surface Width= 5.00'
Bank-Full Depth= 3.00' Flow Area= 33.0 sf, Capacity= 224.26 cfs

2.00' x 3.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 3.0 '/' Top Width= 20.00'
Length= 250.0' Slope= 0.0560 '/'
Inlet Invert= 161.00', Outlet Invert= 147.00'



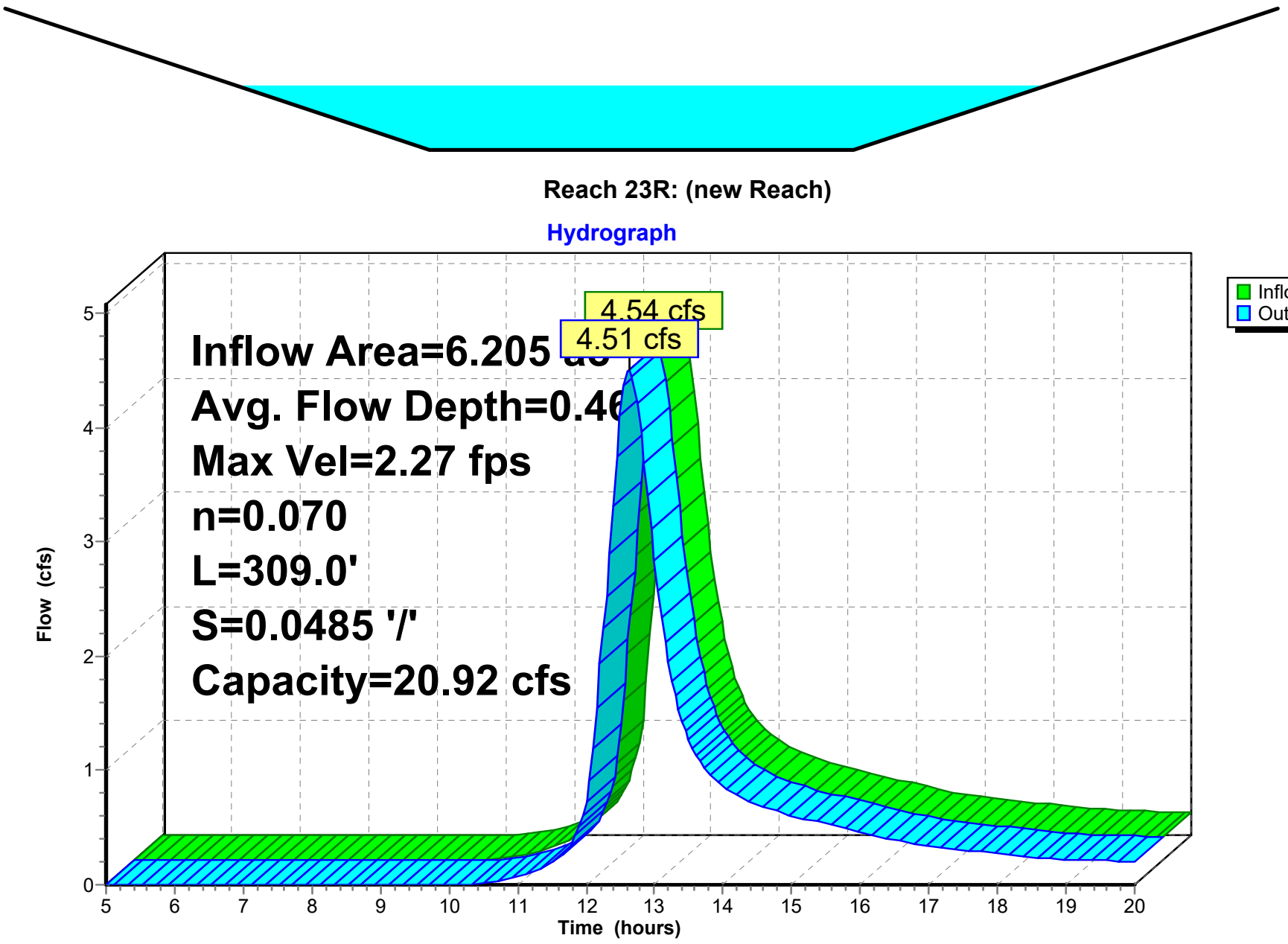
Summary for Reach 23R: (new Reach)

Inflow Area = 6.205 ac, 16.51% Impervious, Inflow Depth > 1.16" for 2-YR event
Inflow = 4.54 cfs @ 12.56 hrs, Volume= 0.601 af
Outflow = 4.51 cfs @ 12.63 hrs, Volume= 0.599 af, Atten= 1%, Lag= 4.0 min
Routed to Pond SP-2 : (new Pond)

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.27 fps, Min. Travel Time= 2.3 min
Avg. Velocity = 1.05 fps, Avg. Travel Time= 4.9 min

Peak Storage= 615 cf @ 12.59 hrs
Average Depth at Peak Storage= 0.46' , Surface Width= 5.73'
Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 20.92 cfs

3.00' x 1.00' deep channel, n= 0.070 Sluggish weedy reaches w/pools
Side Slope Z-value= 3.0 '/' Top Width= 9.00'
Length= 309.0' Slope= 0.0485 '/'
Inlet Invert= 146.00', Outlet Invert= 131.00'



Summary for Pond 11P: (new Pond)

Inflow Area = 0.302 ac, 23.24% Impervious, Inflow Depth > 1.30" for 2-YR event
Inflow = 0.49 cfs @ 12.08 hrs, Volume= 0.033 af
Outflow = 0.50 cfs @ 12.09 hrs, Volume= 0.033 af, Atten= 0%, Lag= 0.3 min
Primary = 0.50 cfs @ 12.09 hrs, Volume= 0.033 af
Routed to Reach 11R : (new Reach)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 170.12' @ 12.09 hrs Surf.Area= 32 sf Storage= 7 cf

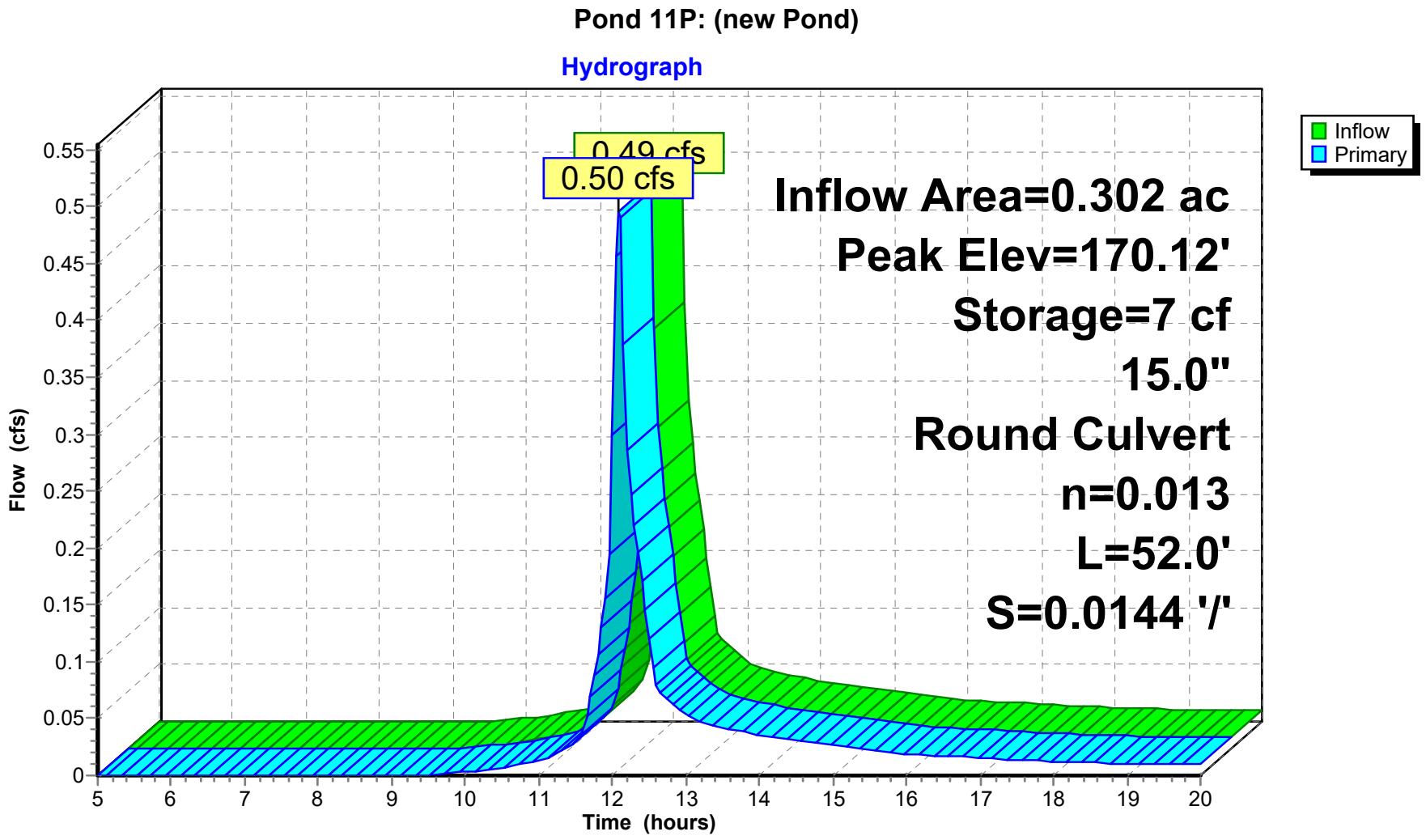
Plug-Flow detention time= 0.5 min calculated for 0.033 af (100% of inflow)
Center-of-Mass det. time= 0.3 min (803.2 - 802.9)

Volume	Invert	Avail.Storage	Storage Description
#1	169.75'	2,066 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
169.75	10	0	0
170.00	22	4	4
171.00	110	66	70
172.00	1,039	575	645
173.00	1,803	1,421	2,066

Device	Routing	Invert	Outlet Devices
#1	Primary	169.75'	**15.0" Round Culvert** L= 52.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 169.75' / 169.00' S= 0.0144 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=0.48 cfs @ 12.09 hrs HW=170.11' (Free Discharge)
1=Culvert (Inlet Controls 0.48 cfs @ 1.62 fps)



Summary for Pond 21P: (new Pond)

Inflow Area = 0.599 ac, 21.48% Impervious, Inflow Depth > 1.11" for 2-YR event
Inflow = 0.78 cfs @ 12.11 hrs, Volume= 0.055 af
Outflow = 0.78 cfs @ 12.11 hrs, Volume= 0.055 af, Atten= 0%, Lag= 0.0 min
Primary = 0.78 cfs @ 12.11 hrs, Volume= 0.055 af
Routed to Reach 21R : (new Reach)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 160.01' @ 12.11 hrs Surf.Area= 11 sf Storage= 0 cf

Plug-Flow detention time= 0.0 min calculated for 0.055 af (100% of inflow)
Center-of-Mass det. time= 0.0 min (812.0 - 812.0)

Volume	Invert	Avail.Storage	Storage Description
#1	160.00'	495 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

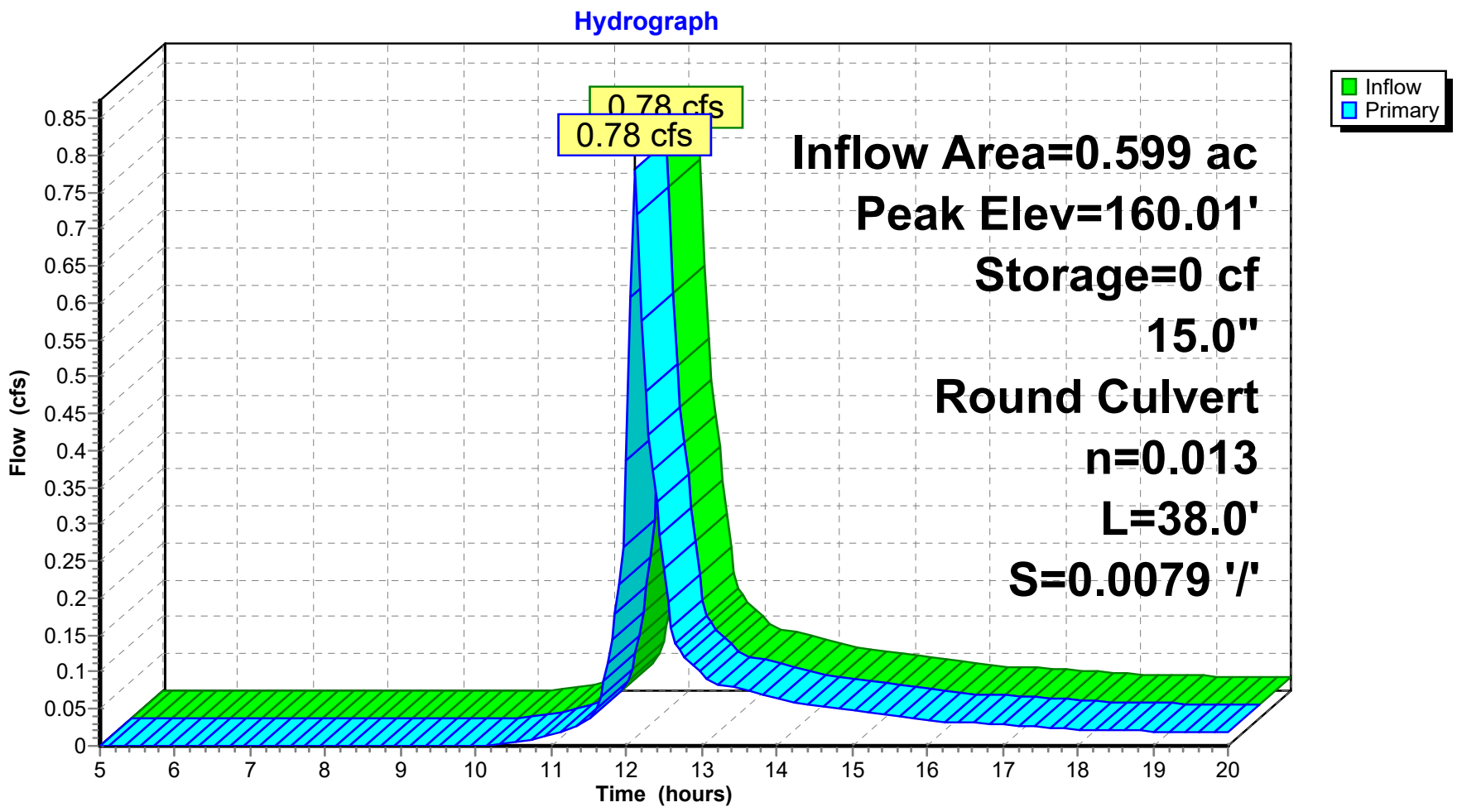
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
160.00	10	0	0
161.00	160	85	85
162.00	660	410	495

Device	Routing	Invert	Outlet Devices
#1	Primary	159.30'	**15.0" Round Culvert** L= 38.0' CPP, projecting, no headwall, Ke= 0.900

Inlet / Outlet Invert= 159.30' / 159.00' S= 0.0079 '/' Cc= 0.900
n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

Primary OutFlow Max=1.61 cfs @ 12.11 hrs HW=160.01' (Free Discharge)
↳**1=Culvert** (Barrel Controls 1.61 cfs @ 3.24 fps)

Pond 21P: (new Pond)



Summary for Pond 22P: (new Pond)

Inflow Area = 5.529 ac, 15.33% Impervious, Inflow Depth > 1.16" for 2-YR event
Inflow = 4.34 cfs @ 12.49 hrs, Volume= 0.534 af
Outflow = 4.30 cfs @ 12.53 hrs, Volume= 0.533 af, Atten= 1%, Lag= 2.4 min
Primary = 4.30 cfs @ 12.53 hrs, Volume= 0.533 af
Routed to Reach 22R : (new Reach)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 164.24' @ 12.53 hrs Surf.Area= 1,320 sf Storage= 512 cf

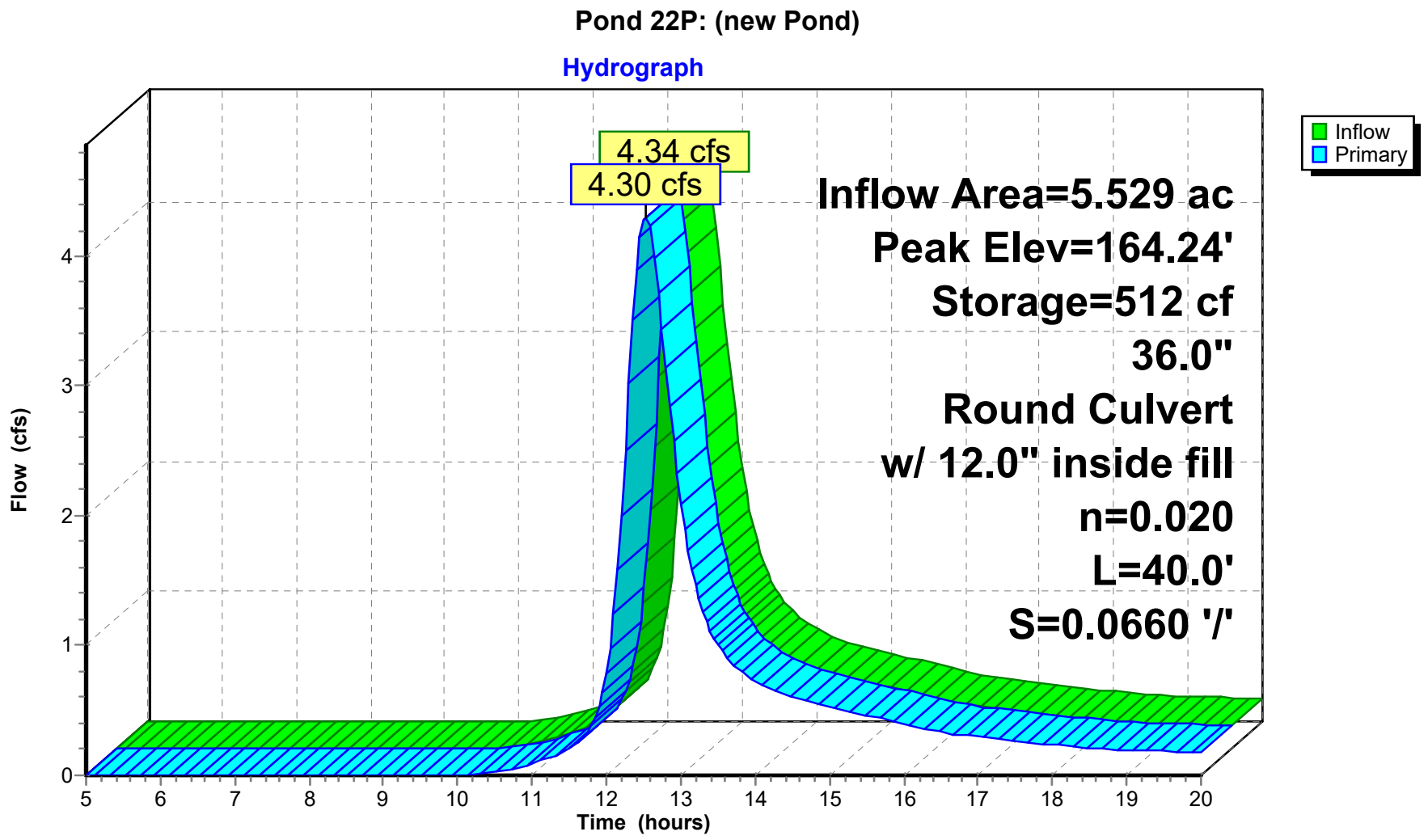
Plug-Flow detention time= 1.8 min calculated for 0.532 af (100% of inflow)
Center-of-Mass det. time= 1.5 min (831.1 - 829.6)

Volume	Invert	Avail.Storage	Storage Description
#1	163.55'	15,385 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
163.55	159	0	0
165.00	2,591	1,994	1,994
166.00	7,096	4,844	6,837
167.00	10,000	8,548	15,385

Device	Routing	Invert	Outlet Devices
#1	Primary	163.55'	**36.0" Round Culvert w/ 12.0" inside fill** L= 40.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 162.55' / 159.91' S= 0.0660 '/' Cc= 0.900 n= 0.020 Corrugated PE, corrugated interior, Flow Area= 5.01 sf

Primary OutFlow Max=4.29 cfs @ 12.53 hrs HW=164.24' (Free Discharge)
1=Culvert (Inlet Controls 4.29 cfs @ 2.10 fps)



Summary for Pond 23P: (new Pond)

Inflow Area = 6.205 ac, 16.51% Impervious, Inflow Depth > 1.16" for 2-YR event
Inflow = 4.54 cfs @ 12.56 hrs, Volume= 0.601 af
Outflow = 4.54 cfs @ 12.56 hrs, Volume= 0.601 af, Atten= 0%, Lag= 0.2 min
Primary = 4.54 cfs @ 12.56 hrs, Volume= 0.601 af
Routed to Reach 23R : (new Reach)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 147.72' @ 12.56 hrs Surf.Area= 147 sf Storage= 59 cf

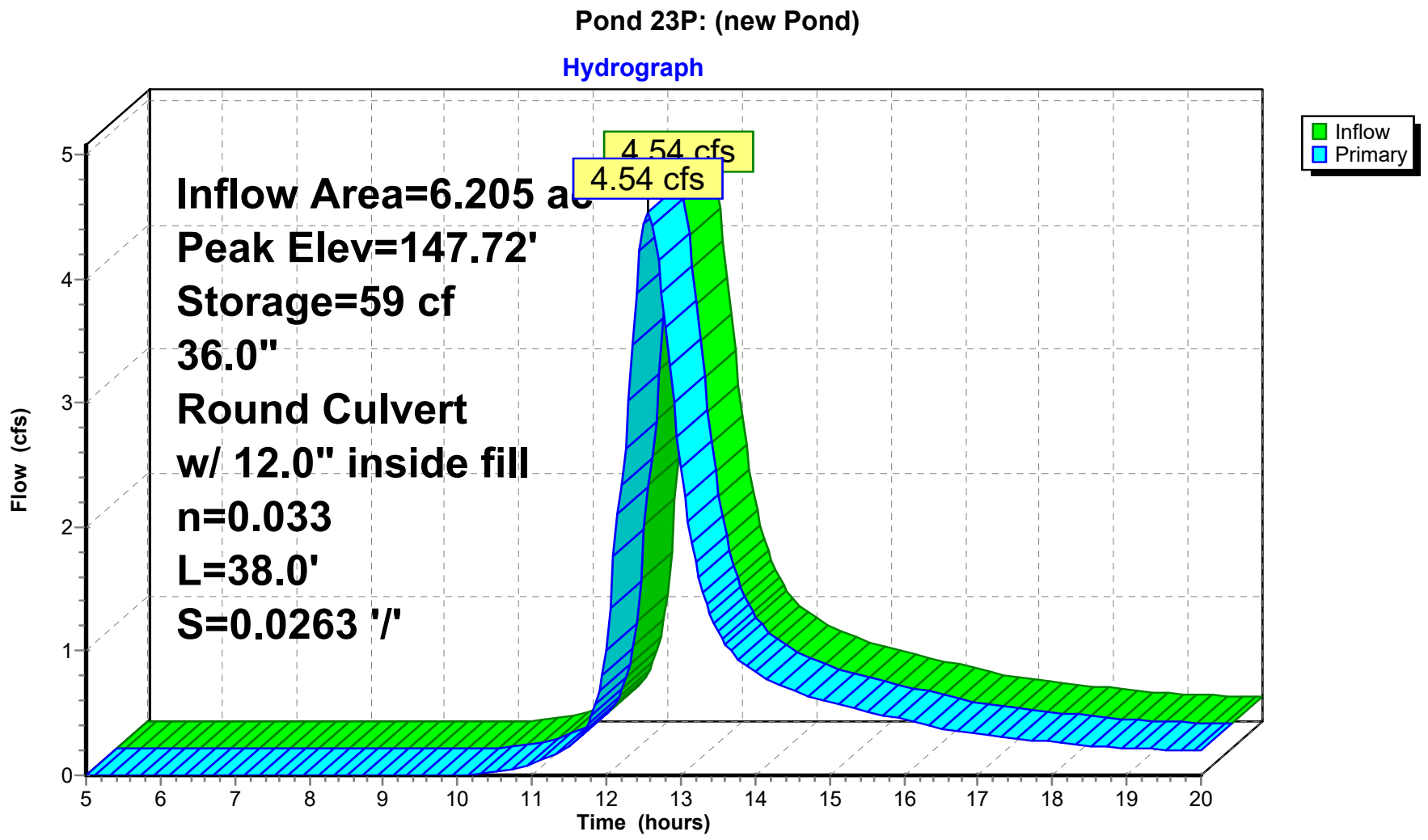
Plug-Flow detention time= 0.2 min calculated for 0.599 af (100% of inflow)
Center-of-Mass det. time= 0.2 min (831.6 - 831.4)

Volume	Invert	Avail.Storage	Storage Description
#1	147.00'	1,151 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
147.00	18	0	0
148.00	198	108	108
149.00	485	342	450
150.00	917	701	1,151

Device	Routing	Invert	Outlet Devices
#1	Primary	147.00'	**36.0" Round Culvert w/ 12.0" inside fill** L= 38.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 146.00' / 145.00' S= 0.0263 '/' Cc= 0.900 n= 0.033 Riprap, 1-inch, Flow Area= 5.01 sf

Primary OutFlow Max=4.53 cfs @ 12.56 hrs HW=147.72' (Free Discharge)
1=Culvert (Inlet Controls 4.53 cfs @ 2.14 fps)



Summary for Pond 30P: (new Pond)

Inflow Area = 3.846 ac, 12.91% Impervious, Inflow Depth > 0.84" for 2-YR event
Inflow = 2.28 cfs @ 12.42 hrs, Volume= 0.268 af
Outflow = 2.28 cfs @ 12.43 hrs, Volume= 0.267 af, Atten= 0%, Lag= 0.5 min
Primary = 2.28 cfs @ 12.43 hrs, Volume= 0.267 af
Routed to Reach 10R : (new Reach)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 176.55' @ 12.43 hrs Surf.Area= 78 sf Storage= 65 cf

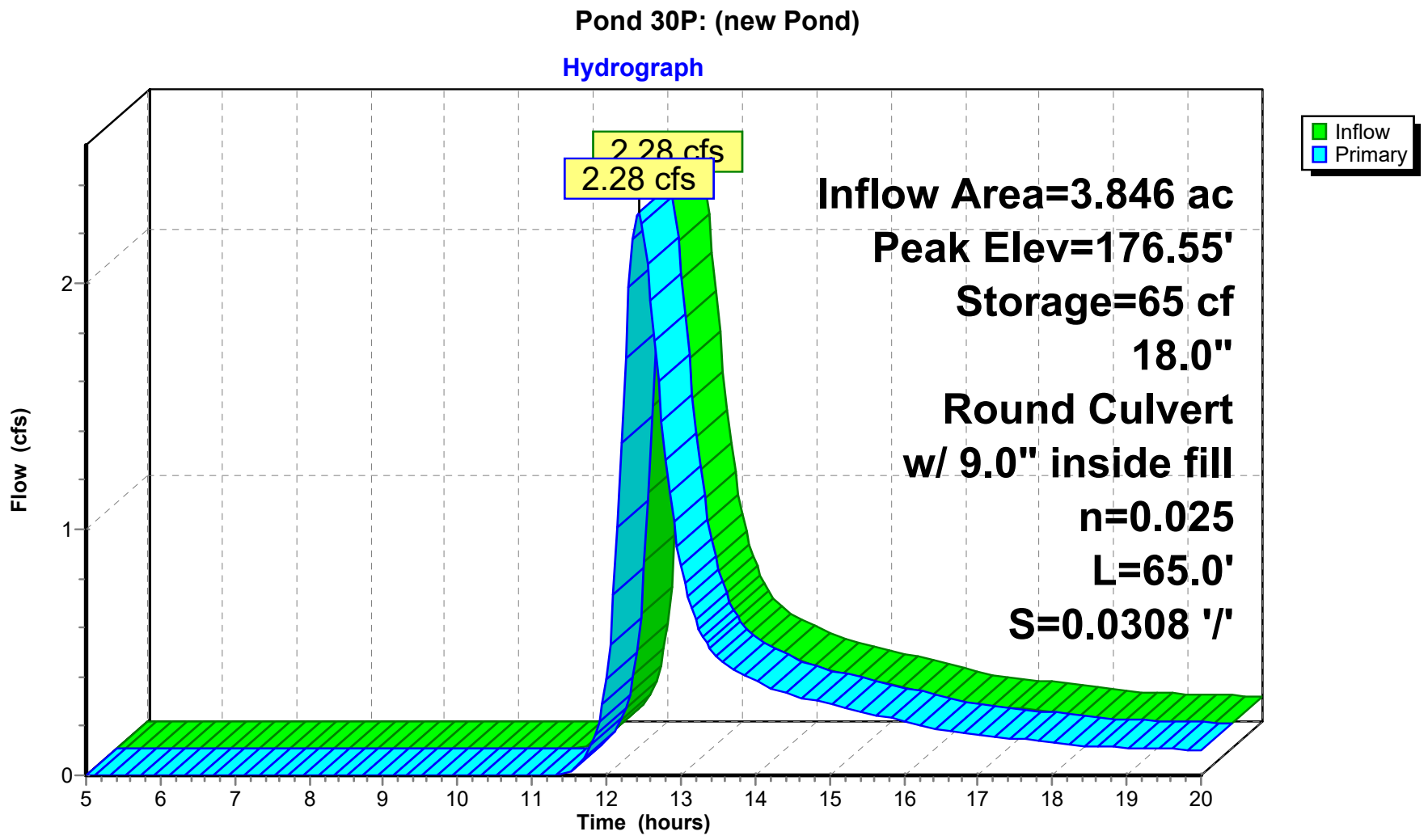
Plug-Flow detention time= 1.2 min calculated for 0.266 af (99% of inflow)
Center-of-Mass det. time= 0.5 min (839.6 - 839.1)

Volume	Invert	Avail.Storage	Storage Description
#1	175.00'	405 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
175.00	10	0	0
176.00	50	30	30
177.00	100	75	105
178.00	500	300	405

Device	Routing	Invert	Outlet Devices
#1	Primary	175.75'	**18.0" Round Culvert w/ 9.0" inside fill** L= 65.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 175.00' / 173.00' S= 0.0308 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.88 sf

Primary OutFlow Max=2.27 cfs @ 12.43 hrs HW=176.55' (Free Discharge)
1=Culvert (Inlet Controls 2.27 cfs @ 2.57 fps)

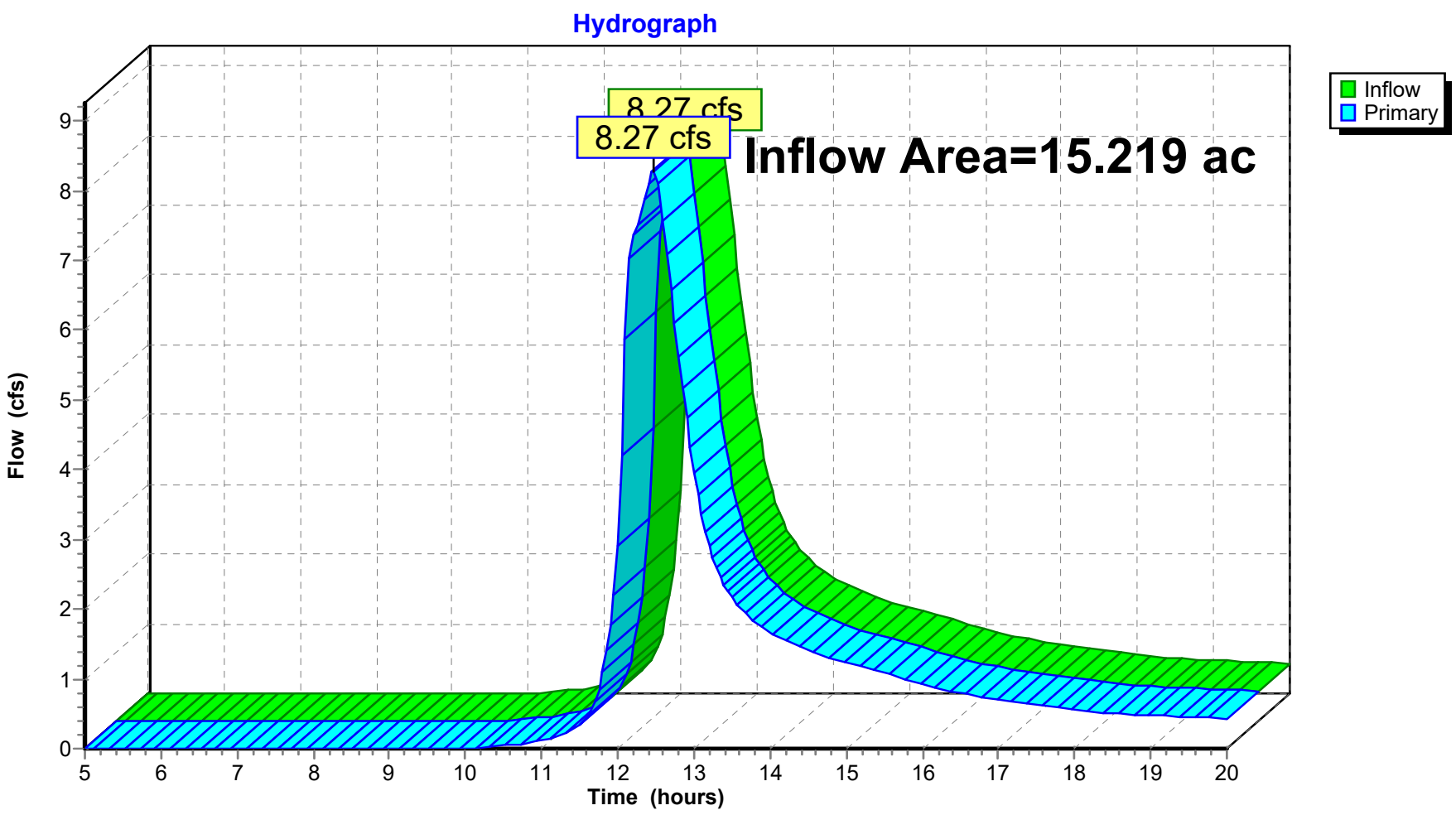


Summary for Pond SP-1: (new Pond)

Inflow Area = 15.219 ac, 10.30% Impervious, Inflow Depth > 0.94" for 2-YR event
Inflow = 8.27 cfs @ 12.46 hrs, Volume= 1.198 af
Primary = 8.27 cfs @ 12.46 hrs, Volume= 1.198 af, Atten= 0%, Lag= 0.0 min
Routed to Pond TOTAL : (new Pond)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SP-1: (new Pond)

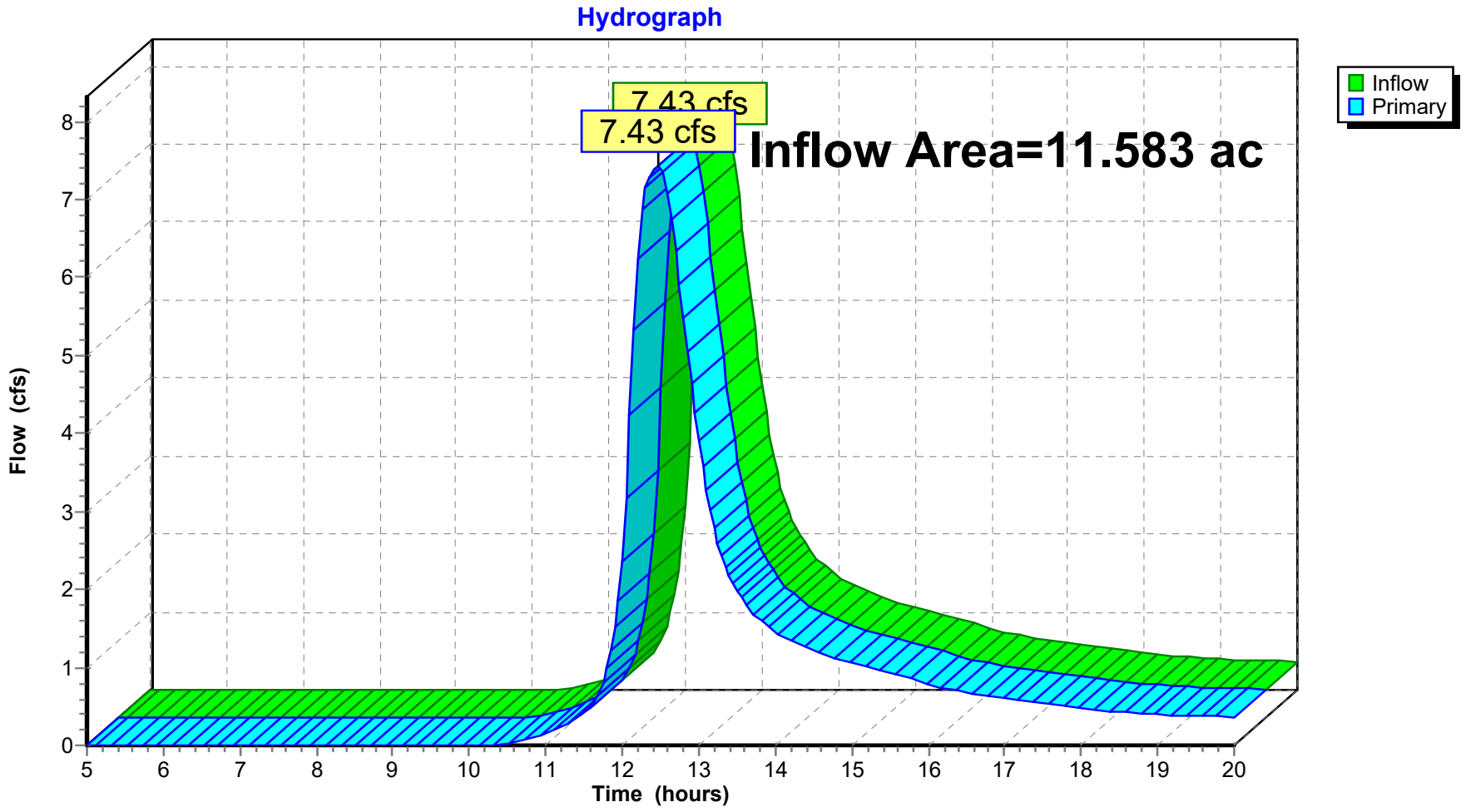


Summary for Pond SP-2: (new Pond)

Inflow Area = 11.583 ac, 15.47% Impervious, Inflow Depth > 1.11" for 2-YR event
Inflow = 7.43 cfs @ 12.48 hrs, Volume= 1.072 af
Primary = 7.43 cfs @ 12.48 hrs, Volume= 1.072 af, Atten= 0%, Lag= 0.0 min
Routed to Pond TOTAL : (new Pond)

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond SP-2: (new Pond)

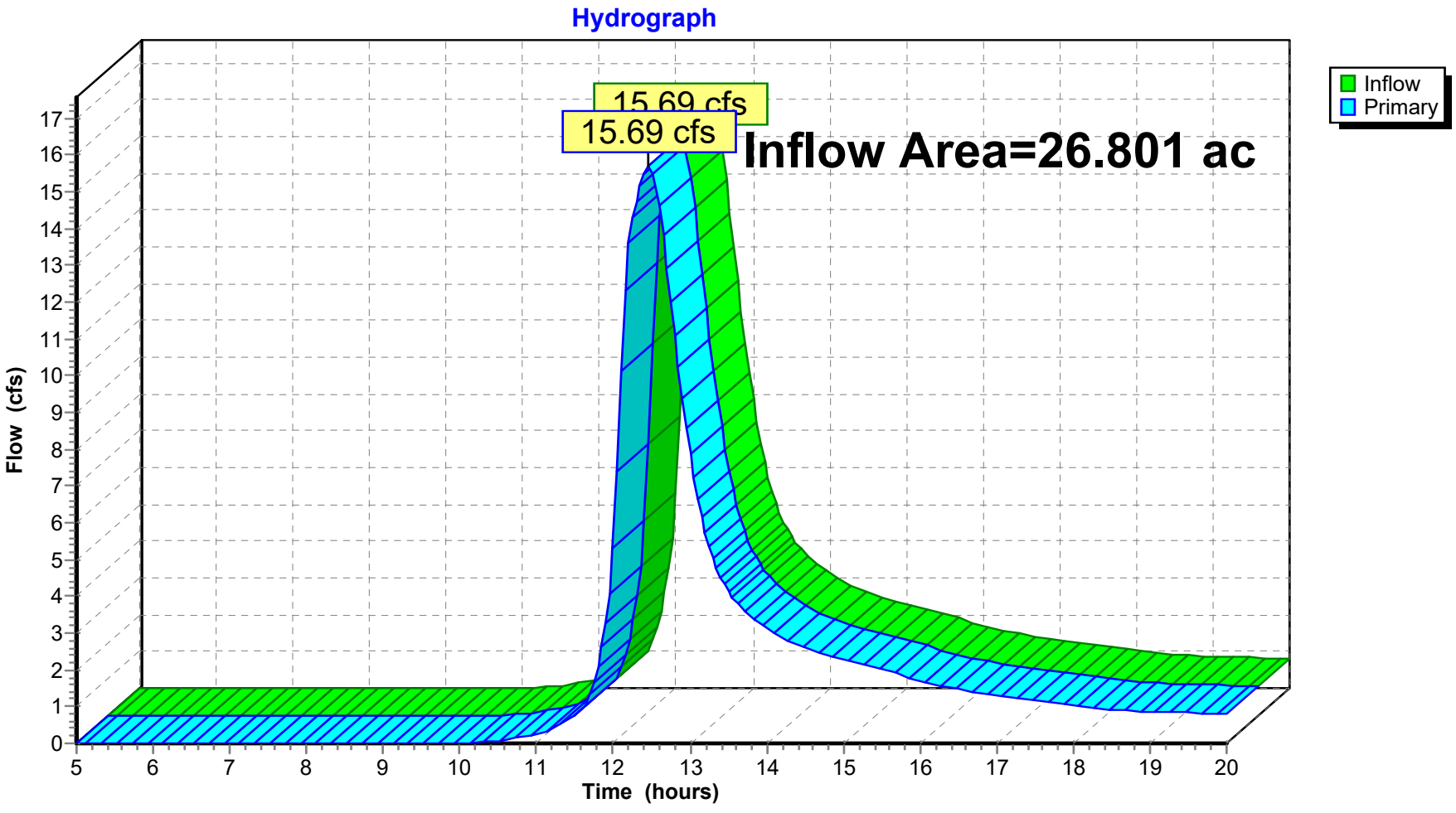


Summary for Pond TOTAL: (new Pond)

Inflow Area = 26.801 ac, 12.53% Impervious, Inflow Depth > 1.02" for 2-YR event
Inflow = 15.69 cfs @ 12.47 hrs, Volume= 2.270 af
Primary = 15.69 cfs @ 12.47 hrs, Volume= 2.270 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Pond TOTAL: (new Pond)



Attachment 3

Road Maintenance Agreement

DECLARATION OF EASEMENTS AND ROAD MAINTENANCE

This Declaration made by **BUILDING SYSTEMS, LLC,** a Main limited liability company with a place of business in Freeport, Maine ("Declarant").

WHEREAS, Declarant owns certain land in Topsham, Maine described in a deed recorded in the Sagadahoc County Registry of Deeds in Book 2021R, Page _____ and shown on a plan titled "Augusta Road Subdivision, Topsham, Maine" prepared by _____, dated _____ and approved by the Topsham Planning Board on _____; and,

WHEREAS, Declarant wishes to ensure future owners' access via the roads shown on said Plan, and to establish the maintenance thereof.

NOW THEREFORE, Declarant declares, for itself and is successors and assigns, as follows:

1. Each numbered lot show on the plan titled "Augusta Road Subdivision, Topsham, Maine" prepared by _____, dated _____ and approved by the Topsham Planning Board on _____ shall be conveyed with an appurtenant easement to use the private way shown on said Plan as "Halcyon Drive" for all purposes for which town roads are used in the State of Maine, including utility and data-transmission services.

2. Lot 6 and Lot 7 as shown on the aforesaid Plan shall be conveyed an additional easement to use the shared driveway shown on said Plan as "20' Wide Shared Gravel Drive (Wesley Way") for all purposes for which town roads are used in the State of Maine, including utility and data-transmission services.

3. The owner(s) of each numbered lot shown on the aforesaid Plan shall be responsible for a share of the maintenance and upkeep, including snow removal and sanding, for Halcyon Drive, with the cost of said maintenance and upkeep to be divided equally among the lot or parcel of lands with legal access to the road.

4. The owner(s) of Lot 6 and Lot 7 shall be responsible for an equal share of the maintenance and upkeep, including snow removal and sanding, for Wesley Way said maintenance and upkeep to be divided equally among the lot or parcel of lands with legal access to the road.

5. Maintenance and upkeep will be limited to that required by ordinary wear and tear to the road condition unless agreed to by a majority of lot or parcel of landowner(s) with legal access to said road. At a minimum, the road will be maintained at all times in passable condition by a two-wheel drive vehicle.

6. Any maintenance and/or repair decisions that substantially change the nature of the road infrastructure, such as but not limited to the replacement of culverts with bridges, pulling culverts, and re-routing ways shall be agreed to by a majority of lot owner(s) with legal access to the road. Nothing contained herein, however, shall require Building Systems, LLC to seek permission to improve or extend the road or to grant others legal access thereto.

7. Notwithstanding any other provision of this Agreement, should the road be damaged beyond normal wear and tear by a lot owner or a lot owner's contractor(s), agent(s), guest(s) or invitee(s), said owner shall be solely responsible for the cost of repairing said damage.

8. In the event legal action is brought to enforce the terms of this Agreement, the prevailing party(ies) shall be entitled to reasonable costs and expenses of such suit, including, but not limited to, reasonable attorney's fees, court costs, and costs of collection.

9. This Declaration shall be deemed to be covenants running with the land and shall bind the parties, their heirs, successors and assigns, and any person or entity having at any time any interest or estate a lot or parcel of land with legal access to Halcyon Way the road or any extension(s) as though this Agreement was recited and stipulated at length in each and every deed or conveyance of said lot or parcel of land.

BUILDING SYSTEMS, LLC

_____ By:_____
WITNESS Jeffrey Munn, Sole Member

STATE OF MAINE _____, 2022
County of Cumberland

Personally appeared before me Jeffrey Munn, sole member of Building Systems, LLC and acknowledged the above instrument to be his free act and deed in his said capacity and to be the free act and deed of Building Systems, LLC.

Before me,

_____
Notary Public/Attorney-at-Law
Name: _____

Attachment 4

Stormwater Management System Inspection & Maintenance Plan

TERRADYN
CONSULTANTS, LLC

Pineland
Cumberland Hall
41 Campus Drive, Suite 301
New Gloucester, ME 04260

Portland
565 Congress Street, Suite 201
Portland, ME 04101

715 AUGUSTA ROAD
TOPSHAM, MAINE
STORMWATER MANAGEMENT SYSTEM
INSEPCTION & MAINTENANCE PLAN

Project Owner/Developer: Building Systems LLC.
292 Old Brunswick Road
Durham, Maine 04222
(207) 831-7080

Responsible Party: Owner

Prepared By: Terradyn Consultants, LLC
565 Congress Street, Suite 201
Portland, ME 04101
(207) 926-5111

INTRODUCTION:

Regular inspection and maintenance of the entire stormwater management system is crucial to the long-term effectiveness of the system. The responsible party must provide regular inspection and maintenance of all permanent erosion control measures and stormwater management structures, establish any contract services required to implement the program, and keep records and a maintenance log book of inspection and maintenance activities. At a minimum, the inspection and maintenance activities outlined herein should be performed at the recommended intervals. A rainfall event of 1” in a 24 hour period would trigger a wet weather post-constrction inspection.

All measures must be maintained in effective operating condition. A person with knowledge of erosion and sedimentation practices, stormwater management, and the standards and conditions of all local, state and federal permits for the project shall conduct the inspections. The following areas, facilities, and measures must be inspected and identified deficiencies must be corrected.

INSPECTION TASKS

1. Inspect **vegetated areas**, particularly slopes and embankments, early in the growing season or after heavy rains to identify active or potential erosion problems. Replant bare areas or areas with sparse growth. Where rill erosion is evident, armor the area with an appropriate lining or divert the erosive flows to on-site areas able to withstand the concentrated flows.

2. Inspect **ditches, swales and other open stormwater channels** in the spring, late fall and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris, control vegetated growth that could obstruct flow and repair any erosion of the ditch lining. Vegetated ditches must be mowed at least annually or otherwise maintained to control the growth of woody vegetation and maintain flow capacity. Any woody vegetation growing through riprap linings must also be removed. Repair any slumping side slopes as soon as practicable. If the ditch has a riprap lining, replace riprap on areas where any underlying filter fabric or underdrain gravel is showing through the stone or where stones have dislodged. The channel must receive routine maintenance to maintain capacity and prevent or correct any erosion of the channel's bottom or sideslopes.

3. Inspect **culverts** in the spring, in late fall, and after heavy rains to remove any obstructions to flow. Remove accumulated sediments and debris at the inlet, the outlet and within the culvert. Repair any erosion damage at the culvert’s inlet and outlet.

4. Inspect and clean out **catch basins**. Clean-out must include the removal and legal disposal of any accumulated sediments and debris at the bottom of the basin, at any inlet grates, at any inflow channels to the basin and at any pipes between basins. If the basin outlet is designed to trap floatable materials, then remove the floating debris and any floating oils (using oil-absorptive pads).

5. Clear accumulations of winter sand in **parking lots and along roadways** at least once a year, preferably in the spring. Accumulations on pavement may be removed by pavement sweeping. Accumulations of sand along road shoulders may be removed by grading excess sand to the pavement edge and removing it manually or by a front-end loader. Grading of gravel roads, or grading of the gravel shoulders of gravel or paved roads, must be routinely performed to ensure that stormwater drains immediately off the road surface to adjacent buffer areas or stable ditches, and is not impeded by accumulations of graded material on the road shoulder or by excavation of false ditches in the shoulder. If water bars or open-top culverts are used to divert runoff from road surfaces, clean-out any sediments within or at the outlet of these structures to restore their function.

DOCUMENTATION

Keep a log (report) summarizing inspections, maintenance, and any corrective actions taken. The log must include the date on which each inspection or maintenance task was performed, a description of the inspection findings or maintenance completed, and the name of the inspector or maintenance personnel performing the task. If a maintenance task requires the clean-out of any sediments or debris, indicate where the sediment and debris was disposed after removal. The log must be made accessible to city staff and a copy provided to the city upon request. The permittee shall retain a copy of the log for a period of at least five years from the completion of permanent stabilization. This project is subject to the DEP 5-year recertification for long-term maintenance of stormwater management systems. The 5-year recertification form is attached.

The log attached at the end of this plan is from the *Maine Erosion and Sediment Control Best Management Practices (BMPs) Manual for Designers and Engineers (May 2016)*. The log may be used or adapted for this project.

ATTACHMENTS:
Stormwater Management Facilities Inspection & Maintenance Log

DEP 5-year Recertificatoin Form

Stormwater Management Facilities
Post Construction Inspection & Maintenance Log
715 Augusta Road, Topsham, Maine

General Information:

Inspected by:	Date:	Weather:

Reason for Inspection: (Regular Inspection) (Major Rain Event, 1c" in 24 hours)

BMP	Conditions Observed	Repairs Needed?
1. Vegetated Areas		
2. Ditches, Swales, Open Channels		
3. Culverts		

Detailed Repair Notes:

BMP Type	Date	Description of Repairs & Sediment Disposal

Notes:
If a maintenance task requires the clean-out of any sediments or debris, indicate where the sediment and debris was disposed after removal. A copy of this log shall be retained for a period of at least five years from the completion of permanent stabilization. The log must be made accessible to Department of Environmental Protection staff and a copy provided to the Department upon request.

Attachment 5

New Test Pits

SUBSURFACE WASTEWATER DISPOSAL SYSTEM APPLICATION

Maine Department of Human Services
Division of Health Engineering, Station 10
(207) 287-5672 Fax: (207) 287-3165

Town, City, Plantation	Street, Road, Subdivision	Owner or Applicant Name
TOPSHAM	AUGUSTA ROAD	BUILDING SYSTEMS

SITE PLAN Scale 1" = _____ ft.

SITE LOCATION PLAN
(map from Maine Atlas recommended)

SEE TERRADYN PLAN
FOR LOCATION INFORMATION

SOIL PROFILE DESCRIPTION AND CLASSIFICATION (Location of Observation Holes Shown Above)

Observation Hole # TP-12 ☐ Test Pit ☒ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	FINE SANDY LOAM	FRIABLE	DK. BRN. OLIVE YELLOW	
12	SILT LOAM	FIRM	OLIVE GRAY	FEW
18				
24				
30				
36				
42				
48				

Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
8	D		14"	☒ Groundwater ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

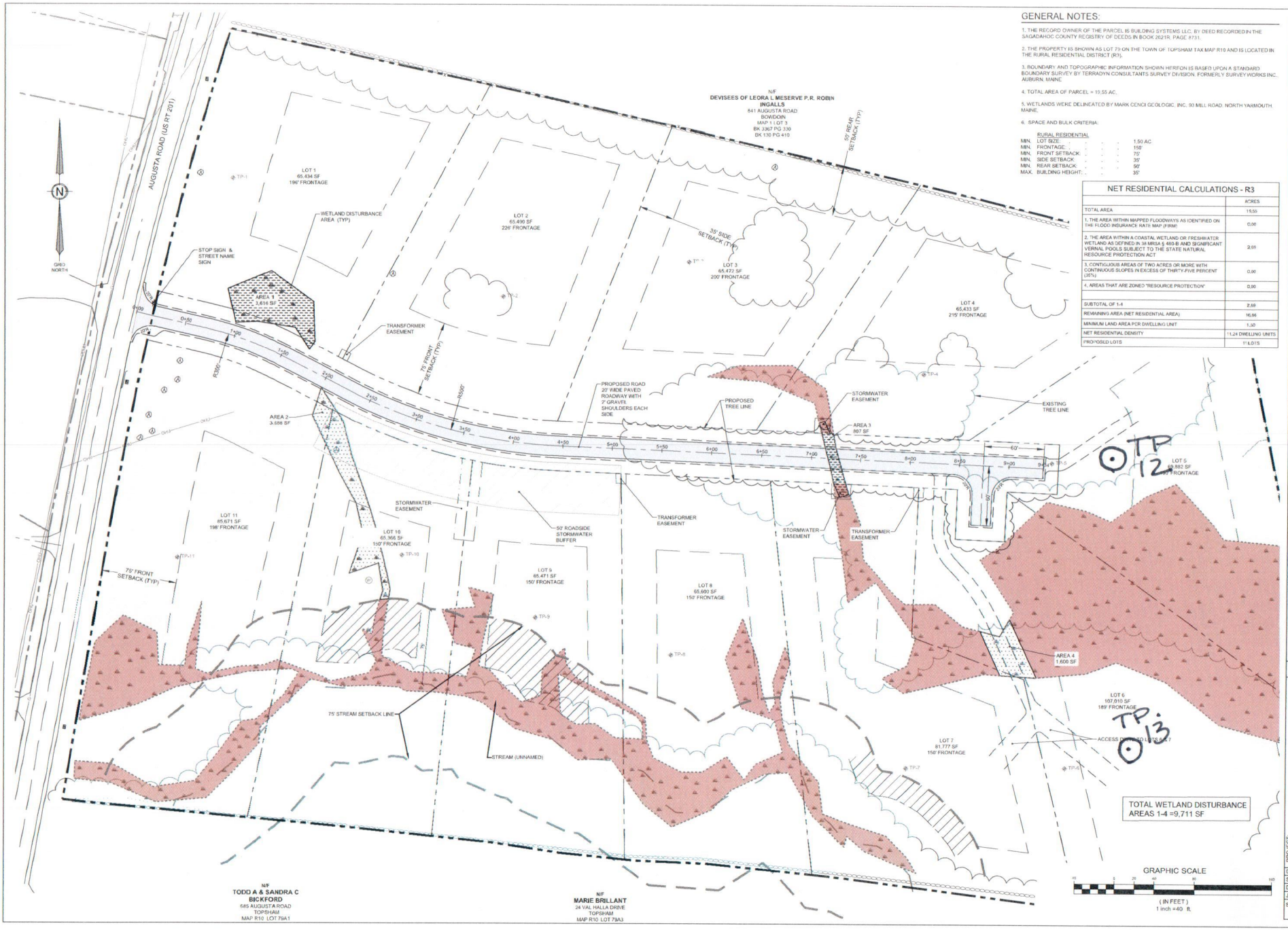
Observation Hole # TP-13 ☐ Test Pit ☒ Boring

" Depth of organic horizon above mineral soil

Depth below mineral soil surface (inches)	Texture	Consistency	Color	Mottling
0	SILT LOAM TO SILT CLAY LOAM	FRIABLE FIRM	DK BRN OLIVE TO OLIVE GRAY	FEW
6				
12				
18				
24				
30				
36				
42				
48				

Soil Profile	Classification Condition	Slope Percent	Limiting Factor Depth	
9	D		9"	☒ Groundwater ☐ Restrictive Layer ☐ Bedrock ☐ Pit Depth

Site Evaluator Signature _____ SE # 262 Date 8-23-22



GENERAL NOTES:

1. THE RECORD OWNER OF THE PARCEL IS BUILDING SYSTEMS LLC. BY DEED RECORDED IN THE SAGADAHOC COUNTY REGISTRY OF DEEDS IN BOOK 20121R, PAGE 8731.

2. THE PROPERTY IS SHOWN AS LOT 79 ON THE TOWN OF TOPSHAM TAX MAP R10 AND IS LOCATED IN THE RURAL RESIDENTIAL DISTRICT (R3).

3. BOUNDARY AND TOPOGRAPHIC INFORMATION SHOWN HEREON IS BASED UPON A STANDARD BOUNDARY SURVEY BY TERRADYN CONSULTANTS SURVEY DIVISION, FORMERLY SURVEYWORKS INC., AUBURN, MAINE.

4. TOTAL AREA OF PARCEL = 19.55 AC.

5. WETLANDS WERE DELINEATED BY MARK CENCI GEOLOGIC, INC. 93 MILL ROAD, NORTH YARMOUTH, MAINE.

6. SPACE AND BULK CRITERIA:

RURAL RESIDENTIAL

MIN.	LOT SIZE:	1.50 AC.
MIN.	FRONTAGE:	150'
MIN.	FRONT SETBACK:	75'
MIN.	SIDE SETBACK:	35'
MIN.	REAR SETBACK:	50'
MAX.	BUILDING HEIGHT:	35'

NET RESIDENTIAL CALCULATIONS - R3

	ACRES
TOTAL AREA	19.55
1. THE AREA WITHIN MAPPED FLOODWAYS AS IDENTIFIED ON THE FLOOD INSURANCE RATE MAP (FIRM)	0.00
2. THE AREA WITHIN A COASTAL WETLAND OR FRESHWATER WETLAND AS DEFINED IN 38 MRSA § 480-B AND SIGNIFICANT VERNAL POOLS SUBJECT TO THE STATE NATURAL RESOURCE PROTECTION ACT	2.59
3. CONTIGUOUS AREAS OF TWO ACRES OR MORE WITH CONTINUOUS SLOPES IN EXCESS OF THIRTY-FIVE PERCENT (35%)	0.00
4. AREAS THAT ARE ZONED "RESOURCE PROTECTION"	0.00
SUBTOTAL OF 1-4	2.59
REMAINING AREA (NET RESIDENTIAL AREA)	16.96
MINIMUM LAND AREA PER DWELLING UNIT	1.50
NET RESIDENTIAL DENSITY	11.24 DWELLING UNITS
PROPOSED LOTS	11 LOTS

STATE OF MAINE
ADRIENNE R. FINE
No. 14252
REGISTERED PROFESSIONAL ENGINEER

NO.	DATE	REVISIONS
		ADD TP'S

DATE: 3-22-2022
P.E.: ADRIENNE R FINE

TERRADYN CONSULTANTS, LLC
Civil Engineering | Land Planning | Stormwater Design | Environmental Permitting
41 CAMPUS DRIVE, SUITE 3
NEW GLOUCESTER, ME 04260
OFFICE: (207) 926-5111 FAX: (207) 221-1317
www.terradynconsultants.com
565 CONGRESS STREET SUITE 303 PORTLAND, ME 04102

PERMIT DRAWING
NOT FOR CONSTRUCTION

PROJECT: AUGUSTA ROAD SUBDIVISION
TOPSHAM, MAINE
SHEET TITLE: SITE LAYOUT
CLIENT: BUILDING SYSTEMS LLC.
282 OLD BRUNSWICK ROAD
DURHAM, MAINE 04222

DATE:	1/7/2022
SCALE:	1"=60'
DESIGNED:	
JOB NO:	22-01
SHEET	C-3.0

C:\OD\OneDrive - Terradyn Consultants\Documents - Project Files\2022 JOBS\22-01 Augusta Road Subdivision\CAD\Permitting\22-01 S.dwg

Attachment 6

Cost Estimate Worksheet

Town of Topsham

Cost Estimate Worksheet

BASIS OF FINANCIAL GUARANTEE

Project Name:	Augusta Road Subdivision
Developer:	Building Systems, LLC
General Contractor:	Building Systems, LLC
Site Contractor:	Building Systems, LLC
Date:	8/26/2022

ITEM		UNIT	QUANTITY	UNIT COST	TOTAL AMOUNT
SITE PREPARATION					
	CLEARING AND GRUBBING	ACRES	1.67	$12,000.00	$20,040.00
	EROSION CONTROL	LUMP SUM	1	$8,000.00	$8,000.00
EARTHWORK					$0.00
	EXCAVATE AND FILL TO SUBGRADE	CY	993	$50.00	$49,650.00
	LEDGE REMOVAL	LUMP SUM	1	$25,000.00	$25,000.00
PAVEMENT, CURB AND SIDEWALK					
	BITUMINOUS SURFACE PAVEMENT	TON	181	$175.00	$31,726.85
	BITUMINOUS BINDER PAVEMENT	TON	302	$160.00	$48,345.68
	BASE GRAVEL	CY	249	$55.00	$13,711.30
	SUBBASE GRAVEL	CY	1247	$30.00	$37,424.44
STORM DRAIN SYSTEM					
	15" STORM DRAIN	LF	92	$85.00	$7,820.00
	36" STORM DRAIN	LF	94	$250.00	$23,500.00
UNDERGROUND UTILITIES					
	ELEC.\TEL. TRENCH & CONDUIT	LF	1619	$20.00	$32,380.00
	TRANSFORMER BASES	EACH	3	$2,000.00	$6,000.00
SURFACE RESTORATION					
	LOAM AND SEED	SY	4351	$8.00	$34,808.00
	RIPRAP	CY	99	$55.00	$5,445.00
	LANDSCAPE PLANTINGS	LUMP SUM	1	$8,000.00	$8,000.00
	CLEANUP	LUMP SUM	1	$5,000.00	$5,000.00

TOTAL COST $356,851.27